In the United States Court of Federal Claims

OFFICE OF SPECIAL MASTERS

No. 16-906V

Filed: November 23, 2020

JOHN ROBERT PHILLIPS, Petitioner, v. SECRETARY OF HEALTH AND HUMAN SERVICES, Respondent.	TO BE PUBLISHED Influenza Vaccine; Human Papillomavirus ("HPV") Vaccine; Chronic Immune Thrombocytopenic Purpura ("ITP").

Michael A. Firestone, Marvin, Firestone, MD, JD and Associates, San Mateo, CA, for Petitioner
Voris E. Johnson, U.S. Department of Justice, Washington, DC, for Respondent

DECISION ON ENTITLEMENT[1]

Oler, Special Master:

On July 29, 2016, John Robert Phillips ("Petitioner") filed a petition for compensation under the National Vaccine Injury Compensation Program, 42 U.S.C. § 300aa-10, *et seq*.[2] (the "Vaccine Act" or "Program"). The petition alleges that Petitioner developed chronic idiopathic thrombocytopenic purpura ("ITP") as a result of the intranasal influenza ("flu") vaccine and/or the intramuscular injection of human papillomavirus ("HPV") vaccine he received on November 20, 2013. Pet. at 1, ECF No. 1.

[1] This Decision will be posted on the United States Court of Federal Claims' website, in accordance with the E-Government Act of 2002, 44 U.S.C. § 3501 (2012). **This means the Decision will be available to anyone with access to the internet**. As provided in 42 U.S.C. § 300aa-12(d)(4)(B), however, the parties may object to the Decision's inclusion of certain kinds of confidential information. To do so, each party may, within 14 days, request redaction "of any information furnished by that party: (1) that is a trade secret or commercial or financial in substance and is privileged or confidential; or (2) that includes medical files or similar files, the disclosure of which would constitute a clearly unwarranted invasion of privacy." Vaccine Rule 18(b). Otherwise, this Decision will be available to the public in its present form. *Id.*

[2] National Childhood Vaccine Injury Act of 1986, Pub. L. No. 99-660, 100 Stat. 3755. Hereinafter, for ease of citation, all "§" references to the Vaccine Act will be to the pertinent subparagraph of 42 U.S.C. § 300aa (2012).

Upon review of the evidence in this case, I find that Petitioner has failed to show that the vaccines he received on November 20, 2013 caused him to develop chronic ITP. The petition is accordingly dismissed.

I. Procedural History

Petitioner filed his Petition on July 29, 2016.[3] On August 4, 2016, Petitioner filed an expert report from Dr. Sohail Ahmed. Ex. 10, ECF No. 6. Petitioner filed Dr. Ahmed's CV and the medical literature associated with his report on August 4, 2016. Exs. 11-26, ECF. Nos. 7-8.

On November 25, 2016, Respondent filed a Rule 4(c) Report, presenting his analysis of Petitioner's claims and concluding this case is not appropriate for compensation under the terms of the Vaccine Act. ECF No. 12.

In support of his position, Respondent filed an expert report from Dr. Joan C. Gill on November 25, 2016. Ex. A, ECF No. 13. Respondent filed Dr. Gill's CV on November 25, 2016. Ex. B, ECF No. 13. Respondent filed the medical literature associated with Dr. Gill's Report on December 1, 2016. Exs. A Tabs 1-7, ECF No. 14. Respondent also filed an expert report from Dr. Neil Romberg on November 25, 2016. Ex. C, ECF No. 13. Respondent filed Dr. Romberg's CV on November 25, 2016. Ex. D, ECF No. 13. Respondent filed the medical literature associated with Dr. Romberg's Report on December 1, 2016. Exs. C Tab 1-14, ECF Nos. 15-16.

Petitioner filed a second expert report from Dr. Ahmed on January 12, 2017. Ex. 27, ECF No. 19. Petitioner filed the medical literature associated with this report on January 26, 2017. Exs. 28-29, ECF No. 20. Petitioner filed a third expert report from Dr. Ahmed on January 30, 2017. Ex. 38, ECF No. 22.

Petitioner filed an expert report from Dr. Yehuda Shoenfeld on October 1, 2017. Ex. 42, ECF No. 34.[4] Petitioner filed Dr. Shoenfeld's CV on September 15, 2017. Ex. 41, ECF No. 31. Petitioner filed the medical literature associated with this report on January 26, 2018. Exs. 43-66, ECF Nos. 37-39.

Respondent filed a second expert report from Dr. Romberg on November 7, 2018. Ex. G, ECF No. 46. Respondent also filed the associated medical literature on the same day. Exs. G, Tabs 1-10, ECF No. 46.

On December 13, 2018, Petitioner filed a fourth expert report from Dr. Ahmed. Ex. 69, ECF No. 50. Petitioner filed the associated medical literature on the same date. Exs. 70-100, ECF Nos. 50-53. Petitioner also filed an updated CV for Dr. Ahmed. Ex. 101, ECF No. 53.

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[3] This case was initially assigned to now-retired Special Master George Hastings (ECF No. 3), was reassigned to then-Special Master Brian Corcoran on October 10, 2017 (ECF No. 32), and then reassigned to my docket on December 5, 2017 (ECF No. 36).

[4] This report was filed as both Exhibit 40 and Exhibit 42. Exhibit 42 is a signed version of the report and accordingly, I will use Exhibit 42 when I refer to this report.

On March 25, 2019, I issued a scheduling order in which I posed specific questions to Petitioner's expert. Petitioner filed a fifth expert report from Dr. Ahmed on May 22, 2019 addressing these questions. Ex. 103, ECF No. 57. Petitioner filed the medical literature associated with this report on January 6, 2020. Exs. 105-111, ECF No. 69. Petitioner filed an updated CV for Dr. Ahmed on the same date. Ex. 115, ECF No. 69.

On June 14, 2019, I filed a scheduling order where I asked Petitioner whether he was amenable to a ruling on the record. ECF No. 58. Petitioner indicated that he was, and I set a briefing schedule on July 30, 2019. ECF No. 64.

Petitioner filed his memorandum in support of a ruling on the record on January 6, 2020. ECF No. 71. Respondent filed his response on March 5, 2020. ECF No. 72. Petitioner filed a reply brief on April 2, 2020. ECF No. 74.

This matter is now ripe for adjudication.

II. Medical Records

A. Relevant Pre-Vaccination History

Petitioner was born in 1997. Ex. 1 at 1. On February 21, 2007, Petitioner was admitted to the South Sacramento Medical Center Emergency Department for abdominal pain. *Id.* at 12. His platelet count was measured at this visit and was 228 k/ul.[5] *Id.* at 16. Petitioner had a well-child appointment on February 27, 2007 where his platelet count was measured at 248 k/ul. *Id.* at 30.

On February 25, 2008, Petitioner again presented for abdominal pain. Ex. 1 at 45. Dr. Timothy Errera believed that Petitioner may have had either irritable bowel syndrome ("IBS"), inflammatory bowel disease ("IBD"), or constipation. *Id.* at 46. Petitioner's platelet count was measured at this visit and was found to be within normal range. *Id.* at 49.

On May 6, 2008, Petitioner presented to Dr. Michael Durant with complaints of abdominal pain. Ex. 1 at 61. Dr. Durant noted that Petitioner "is a mostly healthy pubertal male who is referred for evaluation of chronic abdominal pain of at least a year's duration." *Id.* at 62. Dr. Durant noted that Petitioner was "obese for age" and diagnosed him with "Diarrhea-variant irritable bowel syndrome, largely stress-induced." *Id.* Dr. Durant advised Petitioner's mother to reduce the amount of greasy/spicy food in Petitioner's diet. *Id.* at 62-63.

On November 30, 2009, Petitioner presented to Dr. Errera for a well-child examination. Ex. 1 at 88. Petitioner was found to be borderline diabetic at this visit. *Id.* at 97.

On December 12, 2010, Petitioner presented to Dr. Maria Josefina for a "persistent cough for past 2+ weeks; no fever or congestion…" Ex. 1 at 105. Petitioner was diagnosed with bronchitis and reactive airway disease. *Id.* at 104.

[5] A normal count is between 140-400 k/ul.

On January 29, 2013, Petitioner presented to Dr. Errera for a rash on his left cheek. Ex. 1 at 200. Dr. Errera diagnosed Petitioner with impetigo. On April 3, 2013, Petitioner's impetigo continued to persist, and Petitioner's mother consulted with Dr. Errera over the telephone. *Id.* at 206.

On April 26, 2013, Petitioner received his first HPV vaccine and his Meningococcal conjugate, groups ACYW-135 vaccine ("MENcn-ACYW"). Ex. 1 at 210. On April 29, 2013, Petitioner underwent skin testing for tuberculosis. *Id.* at 213. At this time, Petitioner showed no signs of ITP.

On July 23, 2013, Petitioner was seen by Dr. Timothy Errera for a well visit. Ex. 1 at 218. Dr. Errera noted that Petitioner's rash had dissipated, but he was left with a mark on his face. *Id.* Dr. Errera noted that Petitioner experienced itching, but no pain. *Id.* Petitioner also received his second dose of the HPV vaccine at this visit. *Id.* at 1.

On September 28, 2013, Petitioner presented with thumb pain and was diagnosed with a sprain. Ex. 1 at 237. No fracture or dislocation was seen. *Id.* at 243. At this visit, no rash was visible on Petitioner's skin. *Id.* at 237.

On November 20, 2013, Petitioner presented for a "skin rash on [his] right arm and right leg. [It] started as pimples that popped. [Petitioner] had pain on left x 1 week, getting better, started when he was jumping or running." Ex. 1 at 244. Dr. Errera noted that Petitioner had an "unroofed crusted popular lesion on right arm and right leg with minimal crusting and surrounding redness." *Id.* Dr. Errera took a culture of the crusted area on the arm. *Id.* Petitioner was prescribed sulfamethoxazole-trimethoprim (Bactrim) at this visit. *Id.* Petitioner also received his third dose of the HPV vaccine. *Id.* at 248. On the same day, Petitioner received an intranasal influenza attenuated virus vaccine. Ex. 3 at 1.

B. Relevant Post-Vaccination History

On November 21, 2020, Petitioner's mother called Dr. Errera's office. Ex. 1 at 251. She reported that Petitioner "feels warm to touch, is shivering, having body aches. Started about an hour after dose of Bactrim." *Id.* The note from this call further states, "Will stop Bactrim, start Keflex, see how it goes, if getting worse will come in. Diffuse mild red rash to skin, but mom thinks not too worrisome to her right now." *Id*.

On November 22, 2013, Dr. Errera noted in Petitioner's file that he was allergic to Bactrim. Ex. 1 at 254. Dr. Errera also emailed Petitioner's mother to note that Petitioner had tested "positive for an infection that should respond to the antibiotics he's currently taking." *Id.* at 256.

On December 11, 2013, Petitioner's mother emailed Dr. Errera and wrote "I believe [Petitioner] has impetigo again. It looks identical to what he had last year. He is putting cream on it but I think he needs antibiotics. There are several spots on his face. Should I bring him in? He also has a bubble inside his mouth." Ex. 1 at 254. On the same day, Dr. Errera emailed Petitioner's mother to inform her that he would like to "culture the lesion on his cheek. I'm concerned that [it]

might be something else, not just impetigo. How long has it been there?" *Id.* at 255. Petitioner's mother responded that "the bump was under his skin on Saturday and then it was red Sunday. He got more spots and it was bumpy Monday." *Id*.

On December 12, 2013, Petitioner was seen by Dr. Errera for a rash on his face. Ex. 1 at 259. Dr. Errera noted as follows: "Started as bumps under skin surface Saturday, then developed bumps on skin on Sunday that broke open and crusted. No ill contact right now. Has bump on right forearm as well but the location is different from where it was the last time he had a rash." *Id.* Dr. Errera ruled out herpes simplex and varicella zoster at this visit. *Id.* at 262. On December 26, 2013, Petitioner's mother emailed Dr. Errera to inform him that "everything cleared up except for underneath his chin. I am attaching a picture. He is out of pills." *Id.* at 266. On December 27, 2013, Dr. Errera emailed Petitioner's mother back to inform her that "it doesn't look especially infectious at this point, but given that the rest of the rash cleared with the antibiotics, why don't we extend the treatment a bit." *Id.*

On January 30, 2014, Petitioner's mother emailed Dr. Errera to inform him that Petitioner "has an outbreak on his forehead." Ex. 1 at 270. Dr. Errera responded, "strange that it is back again. Did it go away completely last time? Let's try another round of meds, then I would like him to use a daily face wash with antibiotics." *Id.* Petitioner's mother confirmed that "it was gone" last time. *Id.* Dr. Errera emailed back "we didn't grow out anything strange, so it is curious. If he uses the daily antibiotic on his face that might help prevent it from coming back." *Id.*

On March 22, 2014, Petitioner's mother emailed Dr. Errera, saying "[Petitioner] has had a few weeks of coughing up bloody phlegm and he has bruises popping up on his arms, one is very large and very discolored. I am attaching images. We don't remember anything happening to cause these bruises." Ex. 1 at 274.

On March 25, 2014, Petitioner presented to Dr. Errera for bruising on his body. The medical record indicates as follows:

> Started with cough about two weeks ago that lasted for about 1.5 weeks then resolved. Coughing was productive of blood tinged phlegm. Not associated with fever. Had bloody nose about a week ago x 2 in one day, lasted few moments and stopped on own immediately. Around time of coughing started with some bruising on the left upper inner arm that has steadily gotten larger and somewhat darker and firm. Right arm and hands and bilateral sides with rashes x 1.5 -2 weeks as well.

Ex. 1 at 277. Dr. Errera also noted that Petitioner's skin displayed several areas of scattered petechiae that were primarily on his upper arms, upper side, and back. *Id.* at 279. Dr. Errera also noted a large dark blue-black 14x4 cm bruise on Petitioner's left upper inner arm. *Id.* He observed scattered light brown bruises on both hands dorsum (the back of the hand opposite the palm) and the right forearm. *Id.* Dr. Errera diagnosed Petitioner with "probable ITP, no active bleeding at this time." *Id.*

On March 25, 2014, Petitioner presented to the emergency room for thrombocytopenia. Petitioner

> reported fatigue/weakness for the past 1.5-2 weeks with associated mild non-productive cough, occasional blood tinged phlegm, bruising, 2 episodes of epistaxis. [Petitioner] seen by PCP for same today with CBC done. Pt without active bleeding. Denies fever, active cough, chest pain, shortness of breath, bloody nose, abdominal pain, nausea, vomiting, black or bloody stool, hematuria.

Ex. 1 at 295. At this visit, Petitioner's platelet count was measured at 7,000,[6] confirming the diagnosis of ITP. *Id*. at 297, 298. Following the diagnosis, Petitioner was seen by Dr. Patrick Mullin the morning of March 26, 2014 for a pediatric consult. *Id.* at 299-300. At the same visit, Dr. Mullin noted that "[Petitioner] is a 17 Y male[7] who presents with bruising after an apparent upper respiratory tract illness 1 ½ weeks ago." *Id*. at 302.

On March 26, 2014, while still in the hospital, Petitioner was seen by Dr. Elaine Oliveira, who noted that Petitioner was a "17 wk [sic] old dx with ITP 2 wk after a cold. Lately noticed bruises on arms/legs, nose bleed x 2. Otherwise feels well."[8] Ex. 1 at 311. By the time of his discharge, Petitioner's platelet count had risen to 40,000. *Id.* at 358.

Over the following three years, Petitioner's platelet count was measured at various times at the following counts:

Date	**Platelet Count K/uL)**	**Medical Record**
March 31, 2014	27,000	Ex. 1 at 371
April 7, 2014	7,000	Ex. 1 at 392
April 9, 2014	26,000	Ex. 1 at 426
April 14, 2014	100,000	Ex. 1 at 439
April 18, 2014	64,000	Ex. 1 at 443
April 21, 2014	21,000	Ex. 1 at 448
April 24, 2014	17,000	Ex. 1 at 454
April 28, 2014	18,000	Ex. 1 at 493
May 1, 2014	79,000	Ex. 1 at 508
May 8, 2014	92,000	Ex. 1 at 510
May 15, 2014	57,000	Ex. 1 at 518
May 22, 2014	44,000	Ex. 1 at 527
May 29, 2014	66,000	Ex. 1 at 531
June 5, 2014	43,000	Ex. 1 at 542
June 16, 2014	12,000	Ex. 1 at 546
June 30, 2014	129,000	Ex. 1 at 588

[6] This was reduced to k/ul.

[7] I note that Petitioner was 16 at this time.

[8] I note that Petitioner was 16 at this time.

Date	Platelet Count K/uL)	Medical Record
July 14, 2014	14,000	Ex. 1 at 606
July 23, 2014	20,000	Ex. 1 at 622
July 30, 2014	23,000	Ex. 1 at 635
August 8, 2014	26,000	Ex. 1 at 647
August 15, 2014	18,000	Ex. 1 at 658
August 18, 2014	25,000	Ex. 1 at 663
August 25, 2014	33,000	Ex. 1 at 685
September 16, 2014	25,000	Ex. 1 at 704
November 21, 2014	41,000	Ex. 1 at 749
December 31, 2014	27,000	Ex. 1 at 761
February 6, 2015	39,000	Ex. 1 at 779
June 10, 2015	31,000	Ex. 1 at 798
July 2, 2015	64,000	Ex. 1 at 812
July 31, 2015	37,000	Ex. 1 at 824
November 24, 2015	74,000	Ex. 1 at 838
February 15, 2016	43,000	Ex. 2 at 1
March 23, 2016	54,000	Ex. 2 at 18

On April 21, 2014, Dr. Arati Rao noted that "[Petitioner]'s clinical picture still appears to be of ITP." Ex. 1 at 452.

On August 19, 2014, Dr. Sonali Lakshminarayanan discussed Petitioner's ITP with him, and noted that "it is most likely evolving into the chronic form based on the series of his counts over past few weeks…." Ex. 1 at 671.

On March 23, 2015, Dr. Lakshminarayanan emailed Petitioner's mother with a note summarizing Petitioner's clinical course, writing:

> [Petitioner] is a 17-year old adolescent male with a chronic hematological condition called chronic immune thrombocytopenic purpura or chronic ITP, originally diagnosed in March 2014, when he underwent a bone marrow test that showed classical features of immune thrombocytopenia. He presented with excessive skin bruising, recurrent nose bleeds and skin petechiae with low platelet counts ranging between 5-15K. …. Over the past 6-9 months, [Petitioner] has not needed any therapy and has maintained a stable platelet count ranging between 25-35K with no symptoms of bleeding. [Petitioner] has made significant lifestyle changes as per our recommendations.

Ex. 1 at 791.

On March 15, 2016, Petitioner presented to Dr. Stephen Wang for a second opinion regarding his ITP. Dr. Wang indicated in the medical records that "[Petitioner] is an 18 Y male with immune thrombocytopenia for second opinion. Presented in Nov 2013 shortly after

vaccinations (flu, HPV) and antibiotics for upper respiratory infection, developed easy bruising. By March 2014 ecchymoses persisted, labs showed thrombocytopenia 7k…."[9] Ex. 2 at 10.

III. Affidavits and Other Documents

Petitioner filed an affidavit that he authored (Ex. 4) along with one prepared by his mother (Ex. 5), and a letter from his wrestling coach (Ex. 104).

A. Affidavit of Petitioner

Petitioner filed an affidavit on August 4, 2016. Ex. 4. Petitioner wrote that he had discovered bruising on his arm and had been coughing up blood the day before his birthday.[10] *Id.* at 1. Petitioner noted that his symptoms included "fatigue, bruises and petichae [sic] for months" before his diagnosis. *Id.* Petitioner asserted that these symptoms began in November 2013. *Id.*

Petitioner next recounted his doctor's visit on November 20, 2013. Ex. 4 at 1-2. He noted that:

> I went in for a doctor appointment in November…and I was given two vaccines that day as well. I got the flu shot and HPV. The next morning I felt crappy. I had a fever, chills, I was achy, and felt weak. I got better after a few days. I did keep getting a rash over the next few months. …. I had more bruises than normal. I began developing bruises and coughing up blood in March. …. I would get bruises with wrestling, so I thought I would wait and see what happened. The bruises only increased and one in particular became huge and even had a large lump in it.

Id. at 1-2. Finally, Petitioner discussed his current lifestyle and how ITP has changed his life, including the onset of fatigue, anxiety, and problems concentrating. *Id.* at 3.

B. Affidavit of Dawn Phillips

Petitioner filed an affidavit from his mother on August 4, 2016. Ex. 5. Mrs. Phillips wrote that when Petitioner was treated for a skin infection on November 20, 2013, he was given the flu and HPV vaccines. *Id.* at 1. The next morning, she called the doctor's office to inform him that Petitioner was experiencing "fever, chills, achy, and just felt terrible." *Id.* Mrs. Phillips noted that Petitioner's antibiotics were switched and his condition eventually improved. *Id.*

Mrs. Phillips also wrote that following the reaction, Petitioner developed a mysterious rash

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[9] To the extent this entry indicates that Petitioner developed bruising before March 2014, it is inconsistent with the contemporaneous records filed in this case. *See* Ex. 1 at 211 (medical record from visit with Dr. Errera which noted Petitioner's bruising started two weeks prior to March 25, 2014); Ex. 1 at 295 (medical record from Petitioner's visit to the ER on March 25, 2014, which indicated that bruising began two weeks prior); Ex. 1 at 311 (medical record from Petitioner's visit with Dr. Oliveira on March 26, 2014 which stated Petitioner "[l]ately noticed bruises on arms/legs").

[10] Petitioner's birthday is on March 26.

that "kept popping up" in the months that followed. Ex. 5 at 1. She noted that "[Petitioner] began developing bruises and coughing up blood in March." *Id.*

Mrs. Phillips grew concerned about Petitioner's bruises when she saw a particularly large bruise. Ex. 5 at 1. She called the doctor's office and was told to come in as soon as possible. *Id.* Mrs. Phillips also noted that Petitioner's wrestling coach was concerned about the size of the bruise. *Id.* She also noticed "little blood spots underneath Petitioner's skin." *Id.*

The doctor explained to Mrs. Phillips that Petitioner likely had ITP and that his platelet count was 7,000. Ex. 5 at 1-2. Mrs. Phillips also noted that Petitioner had many treatments, including steroids, which had a detrimental effect on him. *Id.* at 2. Finally, Mrs. Phillips explained that Petitioner's life had been made exponentially more difficult and he had suffered from bullying and depression since his diagnosis. *Id.* at 3-4.

C. Letter from Patrick Coffing

Petitioner filed a letter from his wrestling coach, Mr. Patrick Coffing, on July 23, 2019. Ex. 104. Mr. Coffing's letter stated that Petitioner had a "diagnosis of impetigo early in the season and had to sit out until it cleared up. [Petitioner] has never participated in the late February to March portion of the season." *Id.* at 1.

IV. Expert Opinions

A. Petitioner's Experts' Qualifications

1. Dr. Sohail Ahmed

Petitioner filed five expert reports from Dr. Sohail Ahmad. *See* Exs. 10 ("First Ahmed Rep."), 27 ("Second Ahmed Rep."), 38 ("Third Ahmed Rep."), 69 ("Fourth Ahmed Rep."), and 103 ("Fifth Ahmed Rep."). Dr. Ahmed's CV was filed as Exhibit 26 ("Ahmed CV"). Petitioner filed an affidavit regarding Dr. Ahmed's professional credentials. Ex. 115.

Dr. Ahmed received his B.A. from the Johns Hopkins University and his medical degree from the University of Texas at Houston. Ahmed CV at 5. Dr. Ahmed has been a clinical practitioner for seventeen years with a certification in medicine and an additional subspecialty certification (both from the American Board of Internal Medicine) in rheumatology. *Id.* Dr. Ahmed is licensed to practice medicine in both the United States and Italy. *Id.* He has been an academic investigator for twenty years. *Id.* at 1. Dr. Ahmed also spent eight years working in Translational Medicine in various roles as part of Novartis Pharmaceuticals AG. *Id.* at 1-3. Dr. Ahmed is also an executive manager in industry and has spent nine years overseeing the development of small molecules and vaccines. *Id.* Dr. Ahmed carried out his research fellowship training in immunology at MD Anderson Cancer Center. *Id.* at 5.

2. Dr. Yehuda Shoenfeld

Petitioner filed three expert reports from Dr. Yehuda Shoenfeld. Exs. 42 ("First Shoenfeld

Rep."), 71 ("Second Shoenfeld Rep."), and 82 ("Third Shoenfeld Rep."). Petitioner filed Dr. Shoenfeld's CV as Exhibit 41 ("Shoenfeld CV").

Dr. Shoenfeld received his medical training at Hadassah Medical School, Tel Aviv University, and Beilinson Medical Center in Israel. Shoenfeld CV at 2. He has 39 years of research experience and sixteen years of academic experience. *Id.* at 3-4. Dr. Shoenfeld is a member of numerous professional societies and has been awarded twenty prizes for his work. *Id.* at 5-6. Dr. Shoenfeld is also the founder and director of The Center for Autoimmune Diseases at the Sheba Medical Center, the largest hospital in Israel. His work focuses on autoimmune and rheumatic diseases, and he has published over 1800 peer review papers. First Shoenfeld Rep. at 1. He has served on the board of 79 journals and has published many articles on the issues of vaccination and autoimmunity. Shoenfeld CV at 9-12, 22-138. Additionally, Dr. Shoenfeld is the incumbent of the Laura Schwarz-Kipp Chair for Research of Autoimmune diseases ay Tel-Aviv University. *Id.* at 22.

Dr. Shoenfeld's CV does not indicate any clinical experience after 1980. Shoenfeld CV at 3. He has contributed to three articles related to ITP. *Id.* at 45, 96, 130.

B. Respondent's Experts' Qualifications

1. Dr. Joan Gill

Respondent filed a report from Dr. Joan C. Gill. Ex. A (hereinafter "Gill Rep."). Dr. Gill's CV was filed as Exhibit B (hereinafter "Gill CV").

Dr. Gill received her medical degree from the Medical College of Wisconsin. Gill CV at 1. She completed her residency in pediatrics at the Milwaukee Children's Hospital. *Id.* Dr. Gill completed a pediatric hematology-oncology fellowship at the Medical College of Wisconsin and Blood Center of Southeastern Wisconsin. *Id.* Dr. Gill taught at the Medical College of Wisconsin for nearly 40 years and served as director at numerous institutions but notably was the medical director of the Hemophilia and Bleeding Disorders Center at the Children's Hospital of Wisconsin for 15 years. *Id.* at 2-3. Dr. Gill was board certified in pediatrics and pediatric hematology/oncology. *Id.* at 4. Dr. Gill conducted research related to hematology and hemophilia since 1982 and published hundreds of pieces of literature. *Id.* at 11-45.

2. Dr. Neil Romberg

Respondent submitted two expert reports authored by Dr. Neil Romberg. *See* Exs. C ("First Romberg Rep.") and G ("Second Romberg Rep."), ECF Nos. 13, 46. Dr. Romberg's CV was submitted as Ex. D) ("Romberg CV"). ECF No. 13.

Dr. Romberg received a bachelor's degree from the University of Michigan and his medical degree from Pennsylvania State College of Medicine. Romberg CV at 1. He completed his residency at New York University and was an immunology fellow at Yale University. *Id.* Dr. Romberg has held various teaching positions in immunology and pediatrics for the past ten years and is currently the Assistant Professor of Pediatrics at the Children's Hospital of Philadelphia

("CHOP"), University of Pennsylvania School of Medicine. *Id.* Dr. Romberg currently practices as an attending physician of immunology at CHOP. *Id.* He holds specialty certifications in pediatrics and allergy/immunology. *Id.* at 2. Dr. Romberg has received several awards and grants for his work and holds membership in two immunology societies. *Id.* at 2. He is on the board of three immunology journals and has published numerous articles. *Id.* at 3-5.

3. Dr. John Strouse

Because Dr. Gill passed away during the pendency of this matter, Respondent retained Dr. John Strouse to provide a supportive expert opinion. Respondent submitted one expert report from Dr. Strouse. Ex. E ("Strouse Rep."), ECF No. 44.

Dr. Strouse received his medical degree from the Johns Hopkins University School of Medicine in 1996. Strouse CV at 1. Dr. Strouse completed his residency at the University of Rochester and fellowships at the National Institutes of Health in hematology and pediatric oncology and a fellowship at Johns Hopkins University for pediatric hematology/oncology. *Id.* at 2. Dr. Strouse held academic positions at Johns Hopkins and is currently an Associate Professor of Medicine and Pediatrics at Duke University. *Id.* Dr. Strouse is board certified in pediatrics, hematology, and pediatric hematology/oncology. *Id.* at 1.

In addition to his academic and hospital appointments, Dr. Strouse has published over 80 articles covering pediatric hematology and oncology. Strouse CV at 2-8. Dr. Strouse is on the editorial boards for four hematological organizations and journals and has peer-reviewed publications for various journals such as Pediatrics, Journal of the American Medical Association, Stroke, and American Journal of Hematology. *Id.* at 12

C. Expert Reports

1. Dr. Ahmed's First Report

Dr. Ahmed concluded that Petitioner developed chronic ITP as a result of the live-attenuated influenza vaccine he received on November 20, 2020. *See* First Ahmed Rep. at 6. Dr. Ahmed opined that due to his ITP, Petitioner had been forced to make several lifestyle changes, including giving up wrestling and eventually attending medical school. *Id.*

Dr. Ahmed advanced a theory of molecular mimicry to explain how Petitioner may have developed ITP from vaccination. First Ahmed Rep. at 5. Dr. Ahmed defined molecular mimicry as "1) The stimulus for the initial antibody response is a non-self protein (infectious agent) that contains a small (peptide) region that mimics a self-protein and 2) the immune response to the non-self protein that includes this mimic portion subsequently cross-reacts with a similar appearing protein in the host leading to an autoimmune response and subsequently autoimmune disease." *Id.*

Dr. Ahmed described the primary features of ITP as bleeding symptoms sufficient to require treatment; and that in severe ITP, platelet counts are typically below 10,000 to 20,000. First Ahmed Rep. at 3. Dr. Ahmed further described the two most common inciting events as

genetic susceptibility and acquired factors such as viral infections and immune alterations. *Id.* at 3-4 (omitting internal references).

With respect to ITP and the influenza vaccination, Dr. Ahmed opined that molecular mimicry was the mechanism which explained how ITP developed. Specifically, Dr. Ahmed opined that "the underlying pathological mechanism is due to IgG autoantibodies against proteins on the platelet cell's membrane, such as glycoprotein GP2b/3a." First Ahmed Rep. at 3. "Molecular mimicry between a component in the influenza vaccine and a protein on human platelets has been suggested as the likely mechanism for influenza-induced ITP. Molecular mimicry is of particular relevance to vaccine-associated autoimmune diseases as has recently been demonstrated for influenza vaccines." *Id.* at 5 (omitting internal references).

Dr. Ahmed opined that Petitioner developed ITP only after receipt of an intranasal influenza vaccination, indicating that "there is no evidence in the published scientific literature for an association of HPV infection or HPV vaccination with the development of ITP." First Ahmed Rep. at 5. Dr. Ahmed also believed that the interval between vaccination and the development of ITP is appropriate, writing that "the 5-month interval between the time of influenza vaccination and detection of ITP fall[s] within a plausible window linking the vaccination of November 20, 2013 to dysregulation of the immune response in Petitioner. *Id.*

2. Dr. Gill's Report

Dr. Gill prepared a report in response to Dr. Ahmed's report. In it she agreed with Dr. Ahmed that Petitioner developed ITP. *See* Gill Rep. at 3. However, Dr. Gill disagreed with Dr. Ahmed that there is any increased risk of ITP following influenza vaccine. *Id.* at 5. Dr. Gill believed that the occurrence of ITP in Petitioner "was an incidental event and not caused by the influenza vaccine that he received on November 20, 2013." *Id.*

Dr. Gill defined ITP as a "heterogeneous autoimmune disorder characterized by a low platelet count that is mediated by the presence of antibodies to platelets that increase the clearance and inhibit the production of platelets." Gill Rep. at 3. Dr. Gill noted that ITP is classified as "acute" if ITP persists fewer than six to 12 months in duration, or "chronic", if ITP lasts longer than 12 months. *Id.*

Dr. Gill pointed out that there are dramatic differences between acute and chronic ITP. "Older age (> 11 years) at presentation, female gender, presence of antinuclear antibodies, insidious onset, no preceding infection or vaccination, mild bleeding and higher platelet counts are predictive of chronic ITP." Gill Rep. at 3. Meanwhile, "Acute ITP of childhood often occurs following a viral infection and is thought to be mediated by the formation of viral antigen expression on platelets, binding of antigen/antibody complexes, or generation of antiviral antibodies that cross-react with platelet antigens: resolution of the immune response results in normalization of the platelet count." *Id.* at 3-4. Dr. Gill explained further that chronic ITP "has been shown to be associated with shifts in overall immune regulation resulting in loss of the normal balance between lymphocyte phenotypes and a decrease in t-lymphocytes that regulate the immune response with the development of a chronic autoimmune disorder such as chronic ITP." *Id.* at 4.

Dr. Gill opined that Petitioner's suffered from chronic, rather than acute ITP. Gill Rep. at 4. Dr. Gill took issue with the fact that Petitioner's ITP occurred four months following the receipt of the vaccines in question. *Id.* Dr. Gill opined that "this time course is not consistent with our understanding of the development of antibodies to vaccine antigens." *Id.* Dr. Gill believed that, if Petitioner's vaccines had in fact caused Petitioner's ITP, one would expect the development of ITP symptoms to have occurred much sooner. *Id.*

Dr. Gill concluded by opining that Petitioner had "none of the clinical characteristics typical of postvaccination ITP." Gill Rep. at 5. Dr. Gill wrote that she would expect ITP onset to occur within 30-40 days post-immunization. "[Petitioner]'s onset of ITP, four months after vaccination, was well beyond this expected timeframe." *Id.*

3. Dr. Romberg's First Report

Dr. Romberg prepared a report in response to Dr. Ahmed's report. Dr. Romberg agreed that Petitioner developed ITP. First Romberg Rep. at 2. Further, Dr. Romberg agreed with the other experts in the case that Petitioner's ITP should be classified as chronic ITP. *Id.* Dr. Romberg also agreed that Petitioner showed no evidence of ITP prior to his vaccination on November 20, 2013. *Id.* at 3.

Dr. Romberg disagreed with Dr. Ahmed that the LAIV caused Petitioner's ITP via molecular mimicry. First Romberg Rep. at 3. Dr. Romberg took issue with the fact that Dr. Ahmed cited just nine case studies spanning a 35-year timeframe to support his position that molecular mimicry caused Petitioner's ITP. *Id.* According to Dr. Romberg, "during the same period, an estimated 2.3 billion doses of TIV were administered in the United States alone." *Id.*

Dr. Romberg also questioned the case studies submitted by Dr. Ahmed. Dr. Romberg wrote that Dr. Ahmed discussed patients who received trivalent inactivated influenza vaccine (TIV), while Petitioner received LAIV. First Romberg Rep. at 3-4. In the studies reviewed by Dr. Romberg, "a combined total of 7,948 children/adolescents and 4,661 adults received LAIV. Zero subjects reported ITP." *Id.* Dr. Romberg therefore found no evidence of a causative link between LAIV and the development of ITP. *Id.* at 4.

Dr. Romberg also believed that Petitioner's ITP occurred outside the time frame within which vaccination could be the trigger. First Romberg Rep. at 4. Dr. Romberg wrote that "by no standard…is 125 days (17.9 weeks) a reasonable amount of time to develop vaccine-triggered ITP." *Id.*

Dr. Romberg posited that the most likely cause of Petitioner's ITP was the URI Petitioner suffered approximately one-and-one-half to two weeks prior to his ITP diagnosis. First Romberg Rep. at 5.

4. Dr. Ahmed's Second Report

Dr. Ahmed prepared a report responding to Drs. Gill and Romberg. In Dr. Ahmed's second report, he agreed with Dr. Romberg, stating that Petitioner had a cough without fever for two

weeks, two nosebleeds, and developed bruising prior to his diagnosis of ITP. Second Ahmed Rep. at 1-2.

However, Dr. Ahmed disagreed with Dr. Romberg that Petitioner had an upper respiratory infection ("URI"). Dr. Ahmed believed that "the fact that there was blood while coughing and no fever makes [Petitioner's symptoms] less likely to be an upper respiratory tract illness and more likely symptoms from the ITP that was already ongoing." Second Ahmed Rep. at 2.

Dr. Ahmed cited Respondent's expert reports to restate his conclusion that he believed that Petitioner's influenza vaccination "(and now possibly the HPV vaccine)" triggered the onset of Petitioner's ITP. Second Ahmed Rep. at 3. Dr. Ahmed cited three reasons for this conclusion: First, that Petitioner appeared to suffer from no autoimmune disease suggestive of ITP prior to Petitioner's influenza vaccination. *Id.* Second, the LAIV Petitioner received contained the necessary proteins to trigger ITP. *Id.* Third, that a "cause and effect" relationship existed linking Petitioner's receipt of the vaccine to the development of the symptoms of ITP. *Id.*

Dr. Ahmed also addressed the temporal concerns of Dr. Gill and Dr. Romberg in this report, writing that he believed that Petitioner "could plausibly have been asymptomatic until the platelets had dropped low enough to permit spontaneous bleeding in mid-March 2014." Second Ahmed Rep. at 3.

5. Dr. Ahmed's Third Report

Dr. Ahmed submitted a third report in which he opined about the difficulties Petitioner faced in everyday life following his ITP diagnosis. Third Ahmed Rep. at 2. Dr. Ahmed noted that Petitioner's platelet counts failed to recover to normal levels, despite treatment and that Petitioner struggled with psychological problems, learning disability, and chronic fatigue due to his ITP. *Id.*

6. Dr. Shoenfeld's First Report

Petitioner submitted Dr. Shoenfeld's first report on October 16, 2017. Dr. Shoenfeld opined that Petitioner was in "peak physical health" prior to the vaccinations he received on November 20, 2013. First Shoenfeld Rep. at 6. Dr. Shoenfeld noted that Petitioner's blood test from February 27, 2003 was normal, and that there was no evidence of an autoimmune disease suggestive of ITP in the medical record up to November 30, 2013. *Id.* Dr. Shoenfeld noted that Petitioner's medical history prior to vaccination only included his impetigo diagnosis. *Id.*

Dr. Shoenfeld then outlined Petitioner's symptoms and diagnosis. First Shoenfeld Rep. at 7-8. Dr. Shoenfeld noted that Petitioner was forced to make several lifestyle changes and had developed a fear of needles. *Id.* at 9. Dr. Shoenfeld concluded that Petitioner's ITP was "caused-in-fact by one, or more, or the combination of vaccines he received on November 20, 2013." *Id.*

Dr. Shoenfeld defined ITP as "an acquired autoimmune disease that presents as a low blood platelet count (peripheral blood count of <100 x 10^9/L) typically without signs or symptoms of leukopenia and/or anemia, so long as an overlapping disease is absent. It is characterized by auto-antibodies against platelet proteins." First Shoenfeld Rep. at 9-10. Dr. Shoenfeld further wrote

that ITP is recognized as one of the four most prevalent autoimmune diseases following vaccines." *Id.* at 11.

Dr. Shoenfeld believed that Petitioner developed ITP following his HPV vaccine on November 20, 2013. First Shoenfeld Rep. at 9. Dr. Shoenfeld agreed with other experts that the diagnosis of ITP was determined on March 26, 2014. *Id.* at 10. He further opined that the medical record contained no evidence of autoimmune disease suggestive of ITP prior to Petitioner's vaccination. *Id.* at 10. Dr. Shoenfeld therefore concluded that Petitioner developed ITP due to his HPV vaccine because "[there] is a lack of other reasonable alternative causes other than vaccination, that could explain the emergency of ITP in [Petitioner], a previously healthy individual. *Id.* at 10-11.

Dr. Shoenfeld stated that there existed precedence for ITP induced by HPV vaccine. Dr. Shoenfeld cited two case studies showing two teenage girls (aged 16 and 13 respectively) who developed ITP following HPV vaccination in support of his conclusion. First Shoenfeld Rep. at 11-12; *see* also Pugnet, et al., *Immune Thrombocytopenic Purpura Following Human Papillomavirus Vaccination*, 27 VACCINE 3690 (2009) (filed as Ex. 45) (hereinafter "Pugnet"); Bizjak, et. al., *Vaccinations and Secondary Immune Thrombocytopenia with Antiphospholipid Antibodies by Human Papillomavirus Vaccine*, 53 HEMATOLOGY S48-S50 (2016) (hereafter "Bizjak").[11]

Dr. Shoenfeld postulated two alternate theories as mechanisms by which a vaccine may induce ITP. First, Dr. Shoenfeld submitted the theory of adjuvant-induced autoimmunity. First Shoenfeld Rep. at 12. Under this theory, Dr. Shoenfeld wrote that "each component of [a] vaccine might induce an immune response that can result in the induction or aggravation of autoimmunity. An immunologic adjuvant is a substance that enhances antigen-specific immune response preferably without triggering one on its own." *Id.* at 12. Dr. Shoenfeld stated that it is "not surprising to find that a potent "adjuvant effect" can overcome genetic resistance to autoimmunity." *Id.* at 13. Dr. Shoenfeld concluded that "it appears that the activation of the immune system by natural adjuvants (i.e. infectious agents) or pharmaceutical ones (i.e. vaccines containing aluminum) can, in certain situations, trigger manifestations of autoimmunity or even full-blown autoimmune diseases." *Id.* at 13.

In this particular case, Dr. Shoenfeld suggested the aluminum in the HPV vaccine triggered Petitioner's immune response, thus resulting in the induction of autoimmunity. First Shoenfeld Rep. at 13. Dr. Shoenfeld supported this theory by citing medical literature which "shows that aluminum in vaccine-relevant exposures can trigger adverse inflammatory and autoimmune manifestations in both humans and animals." *Id.* at 13-14; *see also* Rose, *Autoimmunity, Infection, and Adjuvants*, 19 LUPUS 354-358 (2010) (filed as Ex. 49) (hereinafter "Rose"); Agmon-Levin, et. al., *Vaccines and Autoimmunity*, 5 NAT'L REV. RHEUMATOLOGY 648-52 (2009) (filed as Ex. 50) (hereinafter "Agmon-Levin"); Lujan, et. al., *Autoimmune/autoinflammatory Syndrome Induced by Adjuvants (ASIA Syndrome) in Commercial Sheep*, 56 IMMUNOLOGIC RESEARCH 317-24 (Apr. 2013) (filed as Ex. 51) (hereinafter "Lujan").

[11] I note that Dr. Shoenfeld is a co-author of the Bizjack case report.

Dr. Shoenfeld also advanced the theory of molecular mimicry. First Shoenfeld Rep. at 14. Dr. Shoenfeld wrote, "In concomitance with vaccine aluminum adjuvants, molecular mimicry plays a role in inducing autoimmunity following HPV vaccination." *Id.* at 14. Dr. Shoenfeld explained molecular mimicry as follows:

> The epitope integrated within the vaccine antigen shares a similar sequence/structure with a self-antigen, in this way driving the immune system towards self-reactivity. Furthermore, when polyclonal activation of B cells occurs, the increased B cell proliferation, antibody production and formation of circulating immune complexes may result in damage to self-tissues. This process will most commonly occur in genetically predisposed individuals. Indeed, personal or familial susceptibility to autoimmunity and adverse response to a prior dose of the vaccine both appear to be associated with a higher risk of post-vaccination autoimmunity.

Id. Dr. Shoenfeld noted that current medical literature supports a link between adverse auto-immune reactions and HPV vaccines. *Id.*; *see also* Souyah et. al., *Guillain-Barré syndrome after Gardasil vaccination: Data from Vaccine Adverse Event Reporting System 2006-2009*, 29 VACCINE 886-89 (2011) (filed as Ex. 58) (hereinafter "Souyah").

Based on the medical literature, Dr. Shoenfeld concluded that "HPV vaccine may be more likely to trigger autoimmune adverse manifestation compared to other vaccines due to the high antigenicity of the vaccine's recombinant proteins." First Shoenfeld Rep. at 15.

Dr. Shoenfeld concluded his report by writing that:

> it is obvious that in Petitioner's case we have (1) a medical theory causally connecting vaccination and the injury; (2) a logical sequence of events and a medically plausible mechanism (cross-reactivity) showing that the vaccination could have caused the autoimmune injury; (3) a clear temporal relationship between vaccination and injury; (4) previous precedents where the same vaccine caused the same type of injury and within the same timeframe and finally; (5) lack of any reasonable alternative causes that could explain the emergence of a disabling condition in a previously healthy individual.

First Shoenfeld Rep. at 17.

7. Dr. Strouse's Report

Dr. Strouse prepared a report that responded to Drs. Ahmed and Shoenfeld. Dr. Strouse concurred with the diagnosis of primary chronic ITP. Strouse Rep. at 1. Dr. Strouse disagreed, however, that the published evidence supports an increased risk of autoimmune ITP with influenza or quadrivalent HPV vaccine, writing that no scientific evidence of an association between Gardasil or LAIV and ITP. *Id.* at 1-2. According to Dr. Strouse, "natural infections with viral infections has been strongly associated with ITP including HIV, hepatitis C, measles, rubella, Epstein-Barr Virus, and varicella" but not with "natural influenza or HPV infection or the quadrivalent HPV or influenza vaccines." *Id.* at 2.

Dr. Strouse also made note of the interval between symptomatic thrombocytopenia and Petitioner's vaccinations. Dr. Strouse stated that the exposure to the vaccines was three-and-one-half months prior to the onset of Petitioner's ITP symptoms and that this was outside the time frame within which he would expect ITP to develop. Strouse Rep. at 2.

Dr. Strouse noted that there are no studies that support Dr. Shoenfeld's theory of molecular mimicry between HPV viral proteins and proteins found on the platelets or the aluminum adjuvant in the quadrivalent HPV vaccine as a possible trigger of autoimmunity. Strouse Rep. at 2. Dr. Strouse noted that there are, however, "several published large studies that did not identify a relationship between quadrivalent HPV vaccination and ITP." *Id.*

Dr. Strouse also disputed Dr. Ahmed's theory that Petitioner's LAIV triggered his ITP through molecular mimicry. Strouse Rep. at 3. Dr. Strouse stated, "ITP is not associated with natural influenza infection or the influenza vaccination as the evidence supporting this is limited to case reports with the inactivated vaccine and case reports of ITP after natural infection." *Id.*

Dr. Strouse concluded by stating that, in his opinion, neither the LAIV nor the HPV vaccines caused Petitioner's ITP. He stated that "[i]t is far more likely that the true cause of his ITP is an unknown trigger as the majority of cases of ITP in adolescents are not associated with specific causes". Strouse Rep. at 3.

8. Dr. Shoenfeld's Second Report

Petitioner submitted a second expert report from Dr. Shoenfeld responding to Respondent's expert Dr. John Strouse. Dr. Shoenfeld addressed Dr. Strouse's concern over the lack of published medical reports linking vaccination to ITP by citing a single case report that he co-authored. Second Shoenfeld Rep. at 1; *see also* Bizjak.

Dr. Shoenfeld also took issue with Dr. Strouse's time frame for onset of ITP up to six weeks after vaccination, noting that the disease can be present without clinical symptoms. Second Shoenfeld Rep. at 1. Dr. Shoenfeld also noted that SLE incubation time can be from one to ten years, while primary biliary cholangitis may even have 25 years of incubation. *Id.* at 1-2, *see also* Arbuckle; Almasio et al., *Clinical Course and Genetic Susceptibility of Primary Biliary Cirrhosis: Analysis of a Prospective Cohort*, 16 HEPATITIS MONTHLY 11 (2016). From this, Dr. Shoenfeld extrapolated that the three-and-one-half months between Petitioner's vaccination and symptoms of ITP was reasonable. *Id.*

Dr. Shoenfeld also objected to the medical literature cited by Dr. Strouse, opining that it was not reliable as the authors received grants from pharmaceutical companies. Second Shoenfeld Rep. at 2. Dr. Shoenfeld concluded his report by stating that Dr. Strouse's arguments were "irrelevant" and that it was more likely than not that Petitioner's vaccinations were the only cause of Petitioner's ITP. *Id.* at 2.

9. Dr. Romberg's Second Report

In Dr. Romberg's second report, he responded to Dr. Schoenfeld's assertion that the HPV vaccine was responsible for Petitioner's ITP. Second Romberg Rep. at 1. Dr. Romberg disputed Dr. Shoenfeld's theory of ITP induced by HPV as "imaginative and highly unlikely." *Id.* at 2. Dr. Romberg believed that the case studies presented by Dr. Shoenfeld represent two different independent events: the administration of HPV vaccine and the development of ITP. *Id.* Dr. Romberg emphasized that case reports are the "smallest unit of medical science publication and provide the lowest quality evidence." *Id.*

Dr. Romberg also provided comments on Dr. Shoenfeld's theories of alum hyperinflammation and molecular mimicry. Dr. Romberg opined that it is unlikely that "alum contained within Gardasil initiated a delayed inflammatory response resulting in ITP 125 days later." Second Romberg Rep. at 3. He shared a similar concern regarding the theory of molecular mimicry following HPV vaccination. *Id.*

As an added point, Dr. Romberg noted that there

> is specific evidence in the medical record undermining Dr. Shoeneld's theory that anti-C1qR antibodies drove [Petitioner's] ITP. C1qR is highly expressed by neutrophils and monocytes, but medical records from March 2013 demonstrate normal absolute monocyte counts and an elevated number of neutrophils. If anti-C1qR antibodies circulated in [Petitioner] as Dr. Shoenfeld speculates, they would have caused depletion of all C1qR expressing myeloid cells not just his platelets.

Second Romberg Rep. at 3.

Dr. Romberg also restated his conclusion that he believes that, more likely than not, Petitioner's ITP was triggered by the "recent apparent respiratory tract illness" that Petitioner suffered approximately one-and-one-half to two weeks before the onset of his ITP symptoms. Second Romberg Rep. at 3.

10. Dr. Shoenfeld's Third Report

Petitioner submitted a third expert report from Dr. Shoenfeld responding to Respondent's expert Dr. Neil Romberg. Dr. Shoenfeld first disagreed with Dr. Romberg regarding the importance of epidemiological studies, noting that these studies were generally conducted by pharmaceutical companies or researchers with a conflict of interest who were affiliated with these pharmaceutical companies. Third Shoenfeld Rep. at 1.

Dr. Shoenfeld asserted that a six-week time period between vaccination and the development of an autoimmune disease is not a "time limit" within which the autoimmune disease must manifest. Third Shoenfeld Rep at 1-2. Dr. Shoenfeld also included four case reports that he claimed related thrombocytopenia to aluminum exposure and therefore concluded that "aluminum per se can cause thrombocytopenia." *Id.* at 2.

Dr. Shoenfeld concluded his report by noting that the only apparent cause of Petitioner's ITP appeared to be his HPV vaccine. *Id.* at 2.

11. Dr. Ahmed's Fourth Report

In response to Respondent's experts Dr. Strouse and Dr. Romberg, Dr. Ahmed submitted a fourth report in which he addressed why he believed Petitioner's ITP was caused by his influenza vaccination. Fourth Ahmed Rep. at 1. Dr. Ahmed indicated that "diagnosis of ITP at advanced stages of [the] disease does not preclude disease-triggering by influenza vaccination within [a] plausible timeline." *Id.* at 2. Dr. Ahmed restated his conclusion that the fact that Petitioner was coughing up blood without fever is suggestive of advanced stages of ITP rather than a URI. *Id.*

Dr. Ahmed stated that even though Petitioner was not diagnosed with ITP until 120 days after his influenza vaccination, "Petitioner would not be aware that something was wrong with him until the platelets had dropped low enough to result in spontaneous bleeding." Fourth Ahmed Rep. at 1. Dr. Ahmed also pointed out that case reports support influenza infection and influenza vaccination association with ITP. *Id.* In effect, Dr. Ahmed opined that Petitioner could have been asymptomatic until his "platelets had dropped low enough to permit spontaneous bleeding in mid-March 2014." *Id.* at 3.

Dr, Ahmed again restated his conclusion that Petitioner developed ITP as a result of the influenza vaccination because (1) Petitioner did not have an autoimmune condition which could have caused his ITP and (2) a temporal relationship existed between Petitioner's November 20, 2013 vaccine and his development of symptoms of ITP." *Id.* at 2-3.

12. Dr. Ahmed's Fifth Report

On May 22, 2019, Petitioner filed a fifth report from Dr. Ahmed responding to questions that I posed. Ex. 103 (hereinafter "Fifth Ahmed Rep."). Dr. Ahmed wrote that the onset of ITP following vaccination would be "variable" and would depend upon the genetics, the trigger and "which normal immune tolerance mechanism is failing" in a particular patient. Fifth Ahmed Rep. at 1. Dr. Ahmed further stated that one needs to appreciate "the timeframe between an immune "trigger" (either infection or vaccine), development of an immune response (asymptomatic autoimmunity), and then the development of pathogenic autoimmunity with clinical symptoms upon the failure of normal immune regulatory mechanisms." *Id.* Dr. Ahmed supported his point by citing to a journal article by Melissa Arbuckle. Arbuckle et al., *Development of Autoantibodies before the Clinical Onset of Systemic Lupus Erythematosus*, 349 N. ENG. J. MED. 1526-33 (hereinafter "Arbuckle"). The study outlined in this article used frozen serum samples from members of the U.S. Armed Forces and attempted to prove the hypothesis that antibody production precedes the diagnosis of systemic lupus erythematosus. *Id.* at 2.

Dr. Ahmed also restated his conclusion that Petitioner had subclinical ITP prior to the appearance of his first bruise in March 2014. Dr. Ahmed supported his theory that Petitioner was asymptomatic by citing a study of hospitalized patients with post-vaccination ITP. Fifth Ahmed Rep. at 6, *see also* Sauvé et al., *Postvaccination Thrombocytopenia in Canada*, PEDIATRIC INFECTIOUS DISEASES J. 29: 559, 2010 (filed as Ex. A, Tab 6) (hereinafter "Sauvé"). In this study, 96% of patients reported bleeding, and 93% of patients recovered within three months. Fifth Ahmed Rep. at 6. Dr. Ahmed stated this implies that four percent of patients did not present with

symptomatic bleeding, and seven percent of patients did not have documented recovery within three months, and that "therefore, the number of patients presenting with clinical symptoms [of] ITP can be variable." *Id.* Dr. Ahmed did not indicate what period of time would be medically reasonable for a person with asymptomatic ITP to remain asymptomatic. Fifth Ahmed Rep. at 6-7.

Finally, Dr. Ahmed noted that he disagreed with Dr. Gill's description of ITP. Fifth Ahmed Rep. at 7. Dr. Gill noted that "chronic ITP is associated with older age (> 11 years) at presentation, female gender, presence of antinuclear antibodies, insidious onset, no preceding infection or vaccination, mild bleeding, and higher platelet counts." Gill Rep. at 5. Based on this definition, Dr. Ahmed stated that he would find it difficult to say that Petitioner "is typical for the presentation associated with chronic ITP". *Id.*

V. Applicable Law

A. Petitioner's Overall Burden in Vaccine Program Cases

Under the Vaccine Act, a petitioner may prevail in one of two ways. First, a petitioner may demonstrate that she suffered a "Table" injury—i.e., an injury listed on the Vaccine Injury Table that occurred within the time period provided in the Table. § 11(c)(1)(C)(i). "In such a case, causation is presumed." *Capizzano v. Sec'y of Health & Hum. Servs.*, 440 F.3d 1317, 1320 (Fed. Cir. 2006); *see* § 13(a)(1)(B). Second, where the alleged injury is not listed in the Vaccine Injury Table, a petitioner may demonstrate that he suffered an "off-Table" injury. § 11(c)(1)(C)(ii).

For both Table and non-Table claims, Vaccine Program petitioners bear a "preponderance of the evidence" burden of proof. § 13(1)(a). That is, a petitioner must offer evidence that leads the "trier of fact to believe that the existence of a fact is more probable than its nonexistence before [she] may find in favor of the party who has the burden to persuade the judge of the fact's existence." *Moberly v. Sec'y of Health & Hum. Servs.*, 592 F.3d 1315, 1324 (Fed. Cir. 2010); *see also Snowbank Enter. v. United States*, 6 Cl. Ct. 476, 486 (1984) (mere conjecture or speculation is insufficient under a preponderance standard). Proof of medical certainty is not required. *Bunting v. Sec'y of Health & Hum. Servs.,* 931 F.2d 867, 873 (Fed. Cir. 1991). In particular, a petitioner must demonstrate that the vaccine was "not only [the] but-for cause of the injury but also a substantial factor in bringing about the injury." *Moberly*, 592 F.3d at 1321 (quoting *Shyface v. Sec'y of Health & Hum. Servs.*, 165 F.3d 1344, 1352 (Fed. Cir. 1999)); *Pafford v. Sec'y of Health & Hum. Servs.*, 451 F.3d 1352, 1355 (Fed. Cir. 2006). A petitioner may not receive a Vaccine Program award based solely on her assertions; rather, the petition must be supported by either medical records or by the opinion of a competent physician. Section 13(a)(1).

In attempting to establish entitlement to a Vaccine Program award of compensation for a non-Table claim, a petitioner must satisfy all three of the elements established by the Federal Circuit in *Althen v. Sec'y of Health & Hum. Servs.*, 418 F.3d 1274 (Fed. Cir. 2005). *Althen* requires that petitioner establish by preponderant evidence that the vaccination he received caused his injury "by providing: (1) a medical theory causally connecting the vaccination and the injury; (2) a logical sequence of cause and effect showing that the vaccination was the reason for the injury;

and (3) a showing of a proximate temporal relationship between vaccination and injury." *Id.* at 1278.

Under *Althen* prong one, petitioners must provide a "reputable medical theory," demonstrating that the vaccine received *can cause* the type of injury alleged. *Pafford*, 451 F.3d at 1355-56 (citations omitted). To satisfy this prong, a petitioner's theory must be based on a "sound and reliable medical or scientific explanation." *Knudsen v. Sec'y of Health & Hum. Servs*., 35 F.3d 543, 548 (Fed. Cir. 1994). Proof that the proffered medical theory is reasonable, plausible, or possible does not satisfy a petitioner's burden. *Boatmon v. Sec'y of Health & Hum. Servs*., 941 F.3d 1351, 1359-60 (Fed. Cir. Nov. 7, 2019).

Petitioners may satisfy the first *Althen* prong without resort to medical literature, epidemiological studies, demonstration of a specific mechanism, or a generally accepted medical theory. *Andreu v. Sec'y of Health & Hum. Servs.*, 569 F.3d 1367, 1378-79 (Fed. Cir. 2009) (citing *Capizzano*, 440 F.3d at 1325-26). However, special masters are "entitled to require some indicia of reliability to support the assertion of the expert witness." *Boatmon*, 941 F.3d at 1360, *quoting Moberly*, 592 F.3d at 1324. Special Masters, despite their expertise, are not empowered by statute to conclusively resolve what are complex scientific and medical questions, and thus scientific evidence offered to establish *Althen* prong one is viewed "not through the lens of the laboratorian, but instead from the vantage point of the Vaccine Act's preponderant evidence standard." *Id.* at 1380. Accordingly, special masters must take care not to increase the burden placed on petitioners in offering a scientific theory linking vaccine to injury. *Contreras v. Sec'y of Health & Hum. Servs*., 121 Fed. Cl. 230, 245 (2015), *vacated on other grounds*, 844 F.3d 1363 (Fed. Cir. 2017); *see also Hock v. Sec'y of Health & Hum. Servs*., No. 17-168V, 2020 U.S. Claims LEXIS 2202 at *52 (Fed. Cl. Spec. Mstr. Sept. 30, 2020).

The second *Althen* prong requires proof of a logical sequence of cause and effect, usually supported by facts derived from a petitioner's medical records. *Althen*, 418 F.3d at 1278; *Andreu*, 569 F.3d at 1375-77; *Capizzano*, 440 F.3d at 1326 ("medical records and medical opinion testimony are favored in vaccine cases, as treating physicians are likely to be in the best position to determine whether a 'logical sequence of cause and effect show[s] that the vaccination was the reason for the injury'") (quoting *Althen*, 418 F.3d at 1280). Medical records are generally viewed as particularly trustworthy evidence, since they are created contemporaneously with the treatment of the patient. *Cucuras v. Sec'y of Health & Hum. Servs.*, 993 F.2d 1525, 1528 (Fed. Cir. 1993).

However, medical records and/or statements of a treating physician's views do not *per se* bind the special master to adopt the conclusions of such an individual, even if they must be considered and carefully evaluated. Section 13(b)(1) (providing that "[a]ny such diagnosis, conclusion, judgment, test result, report, or summary shall not be binding on the special master or court"); *Snyder v. Sec'y of Health & Hum. Servs*., 88 Fed. Cl. 706, 746 n.67 (2009) ("there is nothing … that mandates that the testimony of a treating physician is sacrosanct -- that it must be accepted in its entirety and cannot be rebutted"). As with expert testimony offered to establish a theory of causation, the opinions or diagnoses of treating physicians are only as trustworthy as the reasonableness of their suppositions or bases. The views of treating physicians should also be weighed against other, contrary evidence also present in the record -- including conflicting opinions among such individuals. *Hibbard v. Sec'y of Health & Hum. Servs*., 100 Fed. Cl. 742,

749 (2011) (not arbitrary or capricious for special master to weigh competing treating physicians' conclusions against each other), *aff'd*, 698 F.3d 1355 (Fed. Cir. 2012); *Caves v. Sec'y of Health & Hum. Servs*., No. 06-522V, 2011 WL 1935813, at *17 (Fed. Cl. Spec. Mstr. Apr. 29, 2011), *mot. for review den'd*, 100 Fed. Cl. 344, 356 (2011), *aff'd without opinion*, 475 Fed. App'x 765 (Fed. Cir. 2012).

The third *Althen* prong requires establishing a "proximate temporal relationship" between the vaccination and the injury alleged. *Althen*, 418 F.3d at 1281. That term has been equated to the phrase "medically-acceptable temporal relationship." *Id.* A petitioner must offer "preponderant proof that the onset of symptoms occurred within a timeframe which, given the medical understanding of the disorder's etiology, it is medically acceptable to infer causation." *de Bazan v. Sec'y of Health & Hum. Servs*., 539 F.3d 1347, 1352 (Fed. Cir. 2008). The explanation for what is a medically acceptable timeframe must also coincide with the theory of how the relevant vaccine can cause an injury (*Althen* prong one's requirement). *Id.* at 1352; *Shapiro v. Sec'y of Health & Hum. Servs*., 101 Fed. Cl. 532, 542 (2011), *recons. den'd after remand*, 105 Fed. Cl. 353 (2012), *aff'd mem*., 503 F. App'x 952 (Fed. Cir. 2013); *Koehn v. Sec'y of Health & Hum. Servs*., No. 11-355V, 2013 WL 3214877 (Fed. Cl. Spec. Mstr. May 30, 2013), *mot. for review den'd* (Fed. Cl. Dec. 3, 2013), *aff'd*, 773 F.3d 1239 (Fed. Cir. 2014).

B. Law Governing Analysis of Fact Evidence

The process for making factual determinations in Vaccine Program cases begins with analyzing the medical records, which are required to be filed with the petition. Section 11(c)(2). The special master is required to consider "all [] relevant medical and scientific evidence contained in the record," including "any diagnosis, conclusion, medical judgment, or autopsy or coroner's report which is contained in the record regarding the nature, causation, and aggravation of the petitioner's illness, disability, injury, condition, or death," as well as the "results of any diagnostic or evaluative test which are contained in the record and the summaries and conclusions." Section 13(b)(1)(A). The special master is then required to weigh the evidence presented, including contemporaneous medical records and testimony. *See Burns v. Sec'y of Health & Hum. Servs*., 3 F.3d 413, 417 (Fed. Cir. 1993) (it is within the special master's discretion to determine whether to afford greater weight to contemporaneous medical records than to other evidence, such as oral testimony surrounding the events in question that was given at a later date, provided that such determination is evidenced by a rational determination).

Medical records created contemporaneously with the events they describe are presumed to be accurate and "complete" such that they present all relevant information on a patient's health problems. *Cucuras*, 993 F.2d at 1528; *Doe/70 v. Sec'y of Health & Hum. Servs*., 95 Fed. Cl. 598, 608 (2010) ("[g]iven the inconsistencies between petitioner's testimony and his contemporaneous medical records, the special master's decision to rely on petitioner's medical records was rational and consistent with applicable law"), *aff'd*, *Rickett v. Sec'y of Health & Hum. Servs*., 468 F. App'x 952 (Fed. Cir. 2011) (non-precedential opinion). This presumption is based on the linked proposition that (i) sick people visit medical professionals; (ii) sick people honestly report their health problems to those professionals; and (iii) medical professionals record what they are told or observe when examining their patients in as accurate a manner as possible, so that they are aware of enough relevant facts to make appropriate treatment decisions. *Sanchez v. Sec'y of Health &*

Hum. Servs., No. 11-685V, 2013 WL 1880825, at *2 (Fed. Cl. Spec. Mstr. Apr. 10, 2013), *mot. for review den'd* (Fed. Cl. Feb. 11, 2019), *vacated on other grounds*, 809 Fed. Appx. 843 (Fed. Cir. 2020); *Cucuras v. Sec'y of Health & Hum. Servs.*, 26 Cl. Ct. 537, 543 (1992), *aff'd*, 993 F.2d at 1525 (Fed. Cir. 1993) ("[i]t strains reason to conclude that petitioners would fail to accurately report the onset of their daughter's symptoms.").

Accordingly, if the medical records are clear, consistent, and complete, then they should be afforded substantial weight. *Lowrie v. Sec'y of Health & Hum. Servs.*, No. 03-1585V, 2005 WL 6117475, at *20 (Fed. Cl. Spec. Mstr. Dec. 12, 2005). Indeed, contemporaneous medical records are generally found to be deserving of greater evidentiary weight than oral testimony -- especially where such testimony conflicts with the record evidence. *Cucuras*, 993 F.2d at 1528; see also *Murphy v. Sec'y of Health & Hum. Servs.*, 23 Cl. Ct. 726, 733 (1991), *aff'd per curiam*, 968 F.2d 1226 (Fed. Cir. 1992), (citing *United States v. U.S. Gypsum Co.*, 333 U.S. 364, 396 (1947) ("[i]t has generally been held that oral testimony which is in conflict with contemporaneous documents is entitled to little evidentiary weight.")).

However, there are situations in which compelling oral testimony may be more persuasive than written records, such as where records are deemed to be incomplete or inaccurate. *Campbell v. Sec'y of Health & Hum. Servs.*, 69 Fed. Cl. 775, 779 (2006) ("like any norm based upon common sense and experience, this rule should not be treated as an absolute and must yield where the factual predicates for its application are weak or lacking"); *Lowrie*, 2005 WL 6117475, at *19 ("[w]ritten records which are, themselves, inconsistent, should be accorded less deference than those which are internally consistent") (quoting *Murphy*, 23 Cl. Ct. at 733)). Ultimately, a determination regarding a witness's credibility is needed when determining the weight that such testimony should be afforded. *Andreu*, 569 F.3d at 1379; *Bradley v. Sec'y of Health & Hum. Servs.*, 991 F.2d 1570, 1575 (Fed. Cir. 1993).

When witness testimony is offered to overcome the presumption of accuracy afforded to contemporaneous medical records, such testimony must be "consistent, clear, cogent and compelling." *Sanchez*, 2013 WL 1880825, at *3 (citing *Blutstein v. Sec'y of Health & Hum. Servs.*, No. 90-2808V, 1998 WL 408611, at *5 (Fed. Cl. Spec. Mstr. June 30, 1998)). In determining the accuracy and completeness of medical records, the Court of Federal Claims has listed four possible explanations for inconsistencies between contemporaneously created medical records and later testimony: (1) a person's failure to recount to the medical professional everything that happened during the relevant time period; (2) the medical professional's failure to document everything reported to her or him; (3) a person's faulty recollection of the events when presenting testimony; or (4) a person's purposeful recounting of symptoms that did not exist. *LaLonde v. Sec'y of Health & Hum. Servs.*, 110 Fed. Cl. 184, 203-04 (2013), *aff'd*, 746 F.3d 1334 (Fed. Cir. 2014). In making a determination regarding whether to afford greater weight to contemporaneous medical records or other evidence, such as testimony at hearing, there must be evidence that this decision was the result of a rational determination. *Burns*, 3 F.3d at 417.

C. Analysis of Expert Testimony

Establishing a sound and reliable medical theory connecting the vaccine to the injury often requires a petitioner to present expert testimony in support of her claim. *Lampe v. Sec'y of Health*

& Hum. Servs., 219 F.3d 1357, 1361 (Fed. Cir. 2000). Vaccine Program expert testimony is usually evaluated according to the factors for analyzing scientific reliability set forth in *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 594-96 (1993). *See Cedillo v. Sec'y of Health & Hum. Servs.*, 617 F.3d 1328, 1339 (Fed. Cir. 2010) (*citing Terran v. Sec'y of Health & Hum. Servs.*, 195 F.3d 1302, 1316 (Fed. Cir. 1999). "The *Daubert* factors for analyzing the reliability of testimony are: (1) whether a theory or technique can be (and has been) tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) whether there is a known or potential rate of error and whether there are standards for controlling the error; and (4) whether the theory or technique enjoys general acceptance within a relevant scientific community." *Terran*, 195 F.3d at 1316 n.2 (citing *Daubert*, 509 U.S. at 592-95).

The *Daubert* factors play a slightly different role in Vaccine Program cases than they do when applied in other federal judicial fora. *Daubert* factors are employed by judges to exclude evidence that is unreliable and potentially confusing to a jury. In Vaccine Program cases, these factors are used in the weighing of the reliability of scientific evidence. *Davis v. Sec'y of Health & Hum. Servs.*, 94 Fed. Cl. 53, 66-67 (2010) ("uniquely in this Circuit, the *Daubert* factors have been employed also as an acceptable evidentiary-gauging tool with respect to persuasiveness of expert testimony already admitted"). The flexible use of the *Daubert* factors to evaluate persuasiveness and reliability of expert testimony has routinely been upheld. *See*, e.g., *Snyder*, 88 Fed. Cl. at 743. In this matter, (as in numerous other Vaccine Program cases), *Daubert* has not been employed at the threshold to determine what evidence should be admitted, but instead to determine whether expert testimony offered is reliable and/or persuasive.

Respondent frequently offers one or more experts of his own in order to rebut a petitioner's case. Where both sides offer expert testimony, a special master's decision may be "based on the credibility of the experts and the relative persuasiveness of their competing theories." *Broekelschen v. Sec'y of Health & Hum. Servs.*, 618 F.3d 1339, 1347 (Fed. Cir. 2010) (citing *Lampe*, 219 F.3d at 1362). However, nothing requires the acceptance of an expert's conclusion "connected to existing data only by the *ipse dixit* of the expert," especially if "there is simply too great an analytical gap between the data and the opinion proffered." *Snyder*, 88 Fed. Cl. at 743 (quoting *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997)). A "special master is entitled to require some indicia of reliability to support the assertion of the expert witness." *Moberly*, 592 F.3d at 1324. Weighing the relative persuasiveness of competing expert testimony, based on a particular expert's credibility, is part of the overall reliability analysis to which special masters must subject expert testimony in Vaccine Program cases. *Id.* at 1325-26 ("[a]ssessments as to the reliability of expert testimony often turn on credibility determinations"); *see also Porter v. Sec'y of Health & Hum. Servs.*, 663 F.3d 1242, 1250 (Fed. Cir. 2011) ("this court has unambiguously explained that special masters are expected to consider the credibility of expert witnesses in evaluating petitions for compensation under the Vaccine Act").

D. Consideration of Medical Literature

Although this decision discusses some but not all of the medical literature in detail, I reviewed and considered all of the medical records and literature submitted in this matter. *See Moriarty v. Sec'y of Health & Hum. Servs.*, 844 F.3d 1322, 1328 (Fed. Cir. 2016) ("We generally presume that a special master considered the relevant record evidence even though [s]he does not

explicitly reference such evidence in h[er] decision."); *Simanski v. Sec'y of Health & Hum. Servs.*, 115 Fed. Cl. 407, 436 (2014) ("[A] Special Master is 'not required to discuss every piece of evidence or testimony in her decision.'" (citation omitted)), *aff'd*, 601 F. App'x 982 (Fed. Cir. 2015).

VI. Analysis

Because Petitioner does not allege an injury listed on the Vaccine Injury Table, his claim is classified as "off-Table." As noted above, to prevail on an "off-Table" claim, Petitioner must prove by preponderant evidence that he suffered an injury and that this injury was caused by the vaccination at issue. *See Capizzano*, 440 F.3d at 1320.

A. ITP Generally

ITP is an autoimmune disorder characterized by a low platelet count and mucocutaneaous bleeding. Cines and Blanchette, *Immune Thrombocytopenia Purpura*, 346 N. ENGL. J. MED. 995-1008 (2002) (filed as Ex. 11) (hereinafter "Cines"). ITP is classified as primary or as secondary to an underlying disorder and can be further classified into either acute or chronic ITP. *Id.* In more than 70% of children the illness resolves within six months, irrespective of whether they receive therapy. *Id.*

The exact cause of ITP is unknown. Cines at 1, 12; *see also* Cooper et al., *The pathogenesis of immune thrombocytopaenic purpura*, 133 BRITISH J. OF HAEMATOLOGY 364-74 (2006) (filed as Ex. 19) (hereinafter "Cooper"). The diagnosis remains one of exclusion. *See* Johnsen, *Pathogenesis in Immune Thrombocytopenia: New Insights*, 1 AM. SOC. HEMATOLOGY EDUC. PROG. 301 (2012) (filed as Ex. 20). More than 70% of cases of ITP have been reported to follow viral infection. Miller et al., *Idiopathic thrombocytopenic purpura and MMR vaccine*, 84 ARCH DIS CHILD 227-29 (2001) (filed as Ex. E, Tab 4). Further, what causes the initial development of antiplatelet antibodies is not clear. Cooper at 2. It is known that genetics play a role. Cines at 1-2.

ITP is broadly sorted into two types: acute and chronic. Definitions vary slightly across the literature, but generally, chronic ITP is defined as isolated thrombocytopenia lasting more than 12 months. *See* Rodeghiero et al., *Standardization of terminology, definitions and outcome criteria in immune thrombocytopenic purpura of adults and children: report from an international working group*, 113 BLOOD 2386-93 (2009) (filed as Ex. C, Tab 1) (hereafter "Rodeghiero") (defining chronic ITP as ITP lasting longer than twelve months); *but see* Terrell et al., *The incidence of immune thrombocytopenic purpura in children and adults: A critical review of published reports*, 85 AM. J. HEMATOLOGY 174-80 (2010) (filed as Ex. A, Tab 7) (defining chronic ITP as thrombocytopenia (platelet count less than 150,000 k/ul) which had persisted for more than six months). Chronic ITP generally is predicted by the presence of antinuclear antibodies, an insidious onset, no preceding infection or vaccination, mild bleeding, and higher platelet counts. *See* Heitink-Pollé, et al., *Clinical and laboratory predictors of chronic immune thrombocytopenia in children: a systematic review and meta-analysis*, 124 BLOOD 22 3295-3307, 3297 (2014) (filed as Exhibit A, Tab 3). Acute ITP, on the other hand, is defined as ITP which has lasted less than twelve months. Rodeghiero at 2387.

Approximately five percent of children[12] still have severe thrombocytopenia requiring therapy one year after diagnosis. Cines at 8. No therapy is universally effective for children who develop chronic ITP. *Id.* at 11. Treatment is recommended for children who have symptomatic thrombocytopenia and platelet counts of less than 30,000 per cubic millimeter. *Id.*

The diagnosis of ITP is one of exclusion. Cines at 3. The duration of bleeding can help to distinguish acute from chronic ITP, while "the absence of systemic symptoms helps clinicians to rule out secondary forms and other diagnoses." *Id.* at 4. A physical examination of patients typically reveals "only evidence of platelet type bleeding, such as petechiae, purpura, conjunctival hemorrhage, or other types of mucocutaneous bleeding." *Id.*

B. Petitioner's ITP Diagnosis

Both Petitioner and Respondent agree that Petitioner meets the diagnostic criteria for ITP. *See* First Ahmed Rep. at 6; First Shoenfeld Rep. at 9; Gill Rep. at 3; First Romberg Rep. at 2; Strouse Rep. at 2; *see also* Resp.'s Brief at 10, Pet'r's Brief at 6.

The experts are in agreement that Petitioner developed chronic ITP. *See* First Shoenfeld Rep. at 9; Gill Rep. at 3; First Romberg Rep. at 2; *see also* Strouse Rep. at 2. Dr. Ahmed stated that Petitioner's "course of ITP is consistent with that of chronic ITP since the thrombocytopenia has persisted beyond one year since the time of diagnosis, unlike the typical course of postvaccination thrombocytopenia." Second Ahmed Rep. at 1. Although in his fifth report, Dr. Ahmed opined that he would find it difficult to say that Petitioner was "typical for the presentation associated with chronic ITP." Fifth Ahmed Rep. at 7.

Petitioner's medical records are clear that he was diagnosed with ITP on March 25, 2014. Ex. 1 at 279. Petitioner's medical records indicate that doctors believed Petitioner had the chronic form of ITP on August 19, 2014. *Id.* at 671. This is confirmed by the fact that Petitioner's platelet count was 54,000 k/ul on March 23, 2016, more than two years after his diagnosis. Ex. 2 at 16. The medical literature indicates that chronic ITP is generally defined as ITP lasting longer than twelve months. *See, e.g.*, Rodeghiero at 2387.

Based on Petitioner's medical records and the diagnoses therein along with the agreement of the experts in this case, I find the preponderance of the evidence establishes that Petitioner suffers from chronic ITP.

C. Petitioner Has Not Carried His Burden of Proof

1. *Althen* Prong 1

[12] Children are generally defined as those under 18 years of age at the time of diagnosis. *See* Moulis et al., *Epidemiology of incident immune thrombocytopenia: a nationwide population-based study in France*, 20 BLOOD 124 (2014) (filed as Ex. 15).

In the context of the Program, "to establish causation, the standard of proof is preponderance of evidence, not scientific certainty." *Langland v. Sec'y of Health & Hum. Serv.*, 109 Fed. Cl. 421, 441 (2013). Petitioner's burden under *Althen*'s first prong is to provide a medical theory causally connecting the vaccination and the injury. *Id.* This theory must be sound and reliable. *Boatmon*, 941 F.3d at 1359.

In this case, Petitioner has advanced two theories to explain how Petitioner developed ITP after his vaccinations: molecular mimicry and a reaction to the aluminum adjuvant in one or more of Petitioner's vaccinations.

a. *Adjuvant-Induced Autoimmunity*

To explain the cause of Petitioner's chronic ITP, Petitioner's expert Dr. Shoenfeld submitted the theory of adjuvant-induced autoimmunity. First Shoenfeld Rep. at 12. Under this theory, Dr. Shoenfeld concluded that "the activation of the immune system by natural adjuvants (i.e., infectious agents) or pharmaceutical ones (i.e., vaccines containing aluminum) can, in certain situations, trigger manifestations of autoimmunity or even full-blown autoimmune diseases." *Id.* at 13.

As an initial matter, it appears that Dr. Shoenfeld is advancing the theory of Autoimmune Syndrome Induced by Adjuvants, or "ASIA." Dr. Shoenfeld has previously acknowledged that ASIA is not a proven theory. *See Rowan v. Sec'y of Health & Hum. Servs.*, 2014 U.S. Claims LEXIS 1436 at *17 (Fed. Cl. Spec. Mstr. Dec. 8, 2014). Dr. Shoenfeld has also acknowledged that the mechanism whereby adjuvants cause autoimmune illness is not known. *Id.* at *37. In previous cases in which the ASIA theory was raised, it has been rejected by other Special Masters as unpersuasive and unreliable. *See id; see also Garner v. Sec'y of Health & Hum. Servs.*, 2017 U.S. Claims LEXIS 459 at n. 14 (Fed. Cl. Spec. Mstr. Mar. 23, 2017); *D'Angiolini v. Sec'y of Health & Hum. Servs.*, 2014 U.S. Claims LEXIS 286 (Fed. Cl. Spec. Mstr. Mar. 27, 2014).

Dr. Shoenfeld supported this theory by citing medical literature which, according to him, "shows that aluminum in vaccine-relevant exposures can trigger adverse inflammatory and autoimmune manifestations in both humans and animals." First Shoenfeld Rep. at 13-14.

The articles cited by Dr. Shoenfeld do not establish that adjuvant-induced autoimmunity can cause ITP. In the Rose article, the author discussed infections as adjuvants and made no mention of aluminum. Rose at 1-2. The Agmon-Levin article, listed as an opinion piece which was co-authored by Dr. Shoenfeld, did not present evidence linking aluminum adjuvants to autoimmunity. In the category entitled, "Possible mechanisms" the authors stated: "Although the mechanisms of adjuvancy are not fully elucidated, adjuvants seem to modulate a common set of genes, promote antigen-presenting cell recruitment and mimic specific sets of conserved molecules such as bacteria components, thus increasing the innate and adaptive immune responses to the injected antigen." Agmon-Levin at 2. This "possible mechanism" is a hypothesis rather than a sound and reliable theory. Finally, the Lujan article discussed ASIA in commercial sheep who received an average of four alum-containing vaccines every year for a period of eight years. Lujan at 2. Dr. Shoenfeld did not explain how vaccination in commercial sheep related to vaccination in

human children. Moreover, none of these articles mentioned ITP as a possible result of vaccination. Further, none make specific mention of the HPV vaccine.

Dr. Shoenfeld also filed four case reports which he states demonstrate that "aluminum *per se* can cause ITP." Third Shoenfeld Rep. at 2 (emphasis in original). *See* Mohan et al., *Role of Extracorporeal Membrane Oxygenation in Aluminum Phosphide Poisoning-Induced Reversible Myocardial Dysfunction: A Novel Therapeutic Modality*, 5 J. 49 EMERGENCY MED. 651-56 (2015) (filed as Ex. 97) (hereinafter "Mohan"); Loyo et al., *Autoimmunity in connection with a metal implant: a case of autoimmune/autoinflammatory syndrome induced by adjuvants*, 4 AUTOIMMUNIE HIGHLIGHTS 33-38 (2013) (filed as Ex. 98) (hereinafter "Loyo"); Hardy et al., *Liver granulomatosis is not an exceptional cause of hypercalcemia with hypoparathyroidism in dialysis patients*, 12 J. NEPHROLOGY 6, 398-403 (1999) (filed as Ex. 99) (hereinafter "Hardy"); Walker et al., *Thrombocytopenia associated with intravenous desferrioxamine*, 6 AM. J. KIDNEY DISEASE 4, 254-56 (1985) (filed as Ex. 100) (hereinafter "Walker").

The Mohan article presented a series of seven case reports involving pesticide poisoning. Mohan at 1. In each case, the patients presented to the emergency room after ingesting various amounts of aluminum phosphide, which the article describes as "a solid fumigant used for the fumigation of agricultural compounds, animal feed, and also for pest control in agricultural fields." *Id.* at 1-2. The patients all had serious medical complications; in fact, two of them died while in the hospital. *Id.* at 2-4. Two of the seven developed thrombocytopenia during their hospitalization. *Id.* at 3. The article discussed the use of extracorporeal membrane oxygenation (ECMO) as a way to treat aluminum phosphide poisoning. The article did not mention vaccination.

The Loyo article discussed the case of a woman who developed "serial episodes of high fever, extreme fatigue, transient thrombocytopenia, multiple cervical adenopathies, hepatosplenomegaly, anemia, neutropenia, severe proteinuria and urine sediment abnormalities, elevated serum ferritin levels, and transient low positive antinuclear antibodies" one year after she received a nickel-titanium chin implant. Loyo at 1. Two-and-one-half years later, the patient decided to have her chin implant removed and all of her symptoms disappeared. *Id.* In conclusion, the authors described this case as "probably the first description of systemic features of autoinflammation in connection with a metal implant." *Id.* at 5. It is difficult to see how this article demonstrates the alum adjuvant in the HPV vaccine causes ITP.

The Hardy article is actually an abstract. This abstract did not discuss an association between aluminum, vaccines, and/or ITP. The abstract concluded that, "liver granulomatosis should be looked for in dialysis patients on the association of unexplained hypercalcemia and normal PTH with anicteric cholestasis, and confirmed by a liver biopsy." Hardy at 2.

The Walker "case report" is a one paragraph abstract. It states in its entirety:

> Desferrioxamine[13] (DFO) was administered intravenously to a 63-year-old chronic hemodialysis patient with osteomalacia believed secondary to aluminum

[13] Desferrioxamine, also known as deferoxamine, is a chelate used to treat iron poisoning; it also chelates aluminum. *See* Desferrioxamine mesylate, *Stedman's Medical Dictionary*, 500, 522 (28th ed. 2006).

> intoxication. Thrombocytopenia was noted after five doses of DFO. Platelet counts normalized after DFO was withheld. Thrombocytopenia recurred upon two rechallenges with this drug. It is suggested that platelet counts be monitored in hemodialysis patients receiving intravenous DFO.

Walker at 1. It is unclear how this abstract suggests that aluminum adjuvants cause ITP. In fact, it seems to suggest that instead, ITP was caused by the administration of Desferrioxamine.

In short, none of these articles cited by Dr. Shoelfeld establish that the aluminum adjuvant in the HPV vaccine causes ITP.

Respondent's experts disagreed that ASIA could cause Petitioner's chronic ITP. *See generally* First Romberg Rep., Strouse Rep. Dr. Romberg stated that

> [i]n some cases, human responses to alum may be excessive and leading to the overproduction of cytokines with pain, swelling and redness at the site of vaccine injection. In rare cases, the cytokines causing a large local vaccine reaction may leak out of local tissues and enter systemic circulation. The result is a febrile response and systemic inflammation.

Second Romberg Rep. at 2. Dr. Romberg pointed out that there is absolutely no indication that Petitioner experienced a fever or a local response to the vaccine. He concluded his discussion of the issue by stating "Accordingly, there is no evidentiary basis to suggest vaccine-related immune hyperactivation." *Id.* at 2-3.

Based on the foregoing, I find that Petitioner has not presented preponderant evidence that adjuvant induced autoimmunity can cause ITP.

b. *Molecular Mimicry*

Petitioner has also advanced a theory of molecular mimicry to explain how Petitioner developed ITP after his vaccinations.

Molecular mimicry is a well-established theory in the Vaccine Program and has been persuasively linked to immune-mediated conditions, to include ITP. *Johnson v. Sec'y of Health & Hum. Servs.*, No. 14–113V, 2017 WL 772534 (Fed. Cl. Spec. Mstr. Jan. 6, 2017) (finding petitioner presented sufficient evidence to conclude the HPV vaccine can cause ITP); *Ebenstein v. Sec'y of Health & Hum. Servs.*, No. 06–573V, 2010 WL 5113185, at *21 (Fed. Cl. Spec. Mstr. Sept. 1, 2010) (accepting that molecular mimicry links the MMR vaccine and ITP).

i. *Vaccination and ITP*

In addition to providing support for their theory of molecular mimicry, the record contains evidence linking vaccination in general to the development of ITP, a concept that also appears to be well supported in the literature. The Sauvé article, which examined postvaccination ITP in Canada stated, "[t]here is an increasing evidence to support a link between vaccinations and

thrombocytopenia, which occurs after approximately 1 in 25,000 to 1 in 40,000 doses of measles-mumps-rubella (MMR) vaccine and less frequently after other vaccines." Sauvé at 559. And, in the Ranjantie article, the authors found eleven children who suffered from ITP following a vaccination other than MMR. Rajantie et al., *Vaccination Associated Thrombocytopenic Purpura in Children*, 25 VACCINE 1838-1840 (2007) (filed as Ex. A, Tab 5). Finally, in O'Leary, the authors noted that "there was a significantly elevated risk of ITP after hepatitis A vaccine at 7 to 17 years of age, and for varicella vaccine and tetanus-diphtheria-acellular-pertussis vaccine at 11 to 17 years." O'Leary et al., *The Risk of Immune Thrombocytopenic Purpura After Vaccination in Children and Adolescents*, 129 PEDIATRICS 2, 248-255 (2011) (hereinafter "O'Leary") (filed as Exhibit 83 and Exhibit C, Tab 9).

Based on the above-mentioned literature, I conclude that there is sufficient evidence to establish that vaccinations in general can cause ITP. Although the precise biological mechanism is unknown, Petitioners' theory of molecular mimicry is biologically probable.

ii. *LAIV Vaccination*

In Dr. Ahmed's first report, he opined that Petitioner developed chronic ITP as a result of the LAIV he received on November 20, 2020. *See* First Ahmed Rep. at 6. To support this theory, Dr. Ahmed cited several case reports. *See* Nagasaki et al., *Postinfluenza Vaccination Idiopathic Thrombocytopenic Purpura in Three Elderly Patients*, 2016 CASE REPORTS IN HEMATOLOGY 7913092 (2016) (filed as Exhibit 17) (hereinafter "Nagasaki"); *see also* Shizuma, *Immune Thrombocytopenia Following Influenza Virus Infection and Influenza Vaccine Administration*, S2 VIROLOGY AND MYCOLOGY 3 (2014) (filed as Exhibit 18) (hereinafter "Shizuma").

In discussing Dr. Ahmed's theory that the LAIV can cause ITP, Dr. Romberg noted that in Nagasaki, the three patients that developed ITP did so after receiving trivalent inactivated influenza vaccine (TIV). First Romberg Rep. at 3; Nagasaki at 2. Similarly, in Shizuma, the six patients who developed ITP did so after receiving TIV. First Romberg Rep. at 3; Shizuma at 3.

Dr. Romberg provided five studies to refute the existence of a causative link between LAIV and the development of ITP. *See* Belshe et al., *Live Attenuated versus Inactivated Influenza Vaccine in Infants and Young Children*, 356 New Eng. J. Med. 685-96 (2007) (filed as Exhibit C Tab 5) (hereinafter "Belshe"); Bergen et al., *Safety of cold-adapted live attenuated influenza vaccine in a large cohort of children and adolescents*, 23 PEDIATRIC INFECTIOUS DISEASES J. 2, 138-44 (2004) (filed as Exhibit C, Tab 6) (hereinafter "Bergen"); De Villiers et al., *Efficacy and safety of a live-attenuated influenza vaccine in adults 60 years of age and older*, 28 VACCINE 228-34 (2009) (filed as Exhibit C, Tab 7) (hereinafter "De Villiers"); Nichol et al., *Effectiveness of Live, Attenuated Intranasal Influenza Virus Vaccine in Healthy, Working Adults*, 281 J. AM. MED. ASS'N 2, 137-45 (1999) (filed as Exhibit C, Tab 8) (hereinafter "Nichol"); *see also* O'Leary.

In Belshe, Bergen, De Villiers, and Nichol, Dr. Romberg noted that "a combined total of 7,948 children/adolescents and 4,661 adults received LAIV. **Zero subjects reported ITP**." First Romberg Rep. at 3-4 (emphasis in original). In O'Leary, while 197 out of 1.8 million children were found to have developed ITP following LAIV, the authors found that this rate was no different to that of children who developed ITP without first being given the vaccine. First

Romberg Rep. at 4; O'Leary at 1. In response, Dr. Ahmed conceded that based on the "limited uptake of LAIV and influenza infection's association with ITP, [it is] difficult to interpret LAIV's association with a rare disease like ITP." Second Ahmed Rep. at 2.

I find the studies cited by Dr. Romberg to be compelling evidence. Based on the foregoing, I find that Petitioner has not presented preponderant evidence which demonstrates that the LAIV can cause ITP.

iii. *HPV Vaccination*

In Dr. Shoenfeld's first report, he opined that Petitioner developed chronic ITP as a result of the third HPV vaccination he received on November 20, 2013. First Shoenfeld Rep. at 9. To support this theory, Dr. Shoenfeld cited two case reports where patients developed ITP following the HPV vaccine. *See* Pugnet at 3690 (detailing the case of a sixteen-year-old girl who developed ITP following the second dose of Gardasil); *see also* Bizjack (detailing a case where a thirteen year old girl developed ITP following her first dose of the HPV vaccine). I also note that in a separate article co-authored by Dr. Shoenfeld, a case report detailed a sixteen-year-old girl who developed "onset of prolonged menorrhagia and a low platelet count" following an HPV vaccination. *See* Perricone et al, *Immune thrombocytopenic purpura (ITP) associated with vaccinations: a review of reported cases*, 60 J. IMMUNOLOGY RESEARCH 226 (2014) (filed as Ex. 70).

Dr. Ahmed, though he disagreed with this conclusion in his first report, pointed out in his second report that the O'Leary article articulated a link between HPV vaccination and ITP. *See* O'Leary at 251 (the authors found "several elevated IRRs that approached statistical significance in older children, such as human papilloma virus (HPV)…."); *see also* Second Ahmed Rep. at 2. Dr. Ahmed did not cite any case reports or additional literature to further support this point.

Respondent's experts all agreed that the HPV vaccination could not have caused Petitioner's chronic ITP. *See* Gill Rep. at 4, Second Romberg Rep. at 1-2, Strouse Rep. at 1-2. Dr. Romberg notes that the age-adjusted prevalence of ITP in the United States shows that about five in every 100,000 children will develop ITP. *Id; see also* Segal and Powe, *Prevalence of immune thrombocytopenia: analyses of administrative data*, 4 J. THROMBOSIS HAEMOSTASIS 2377-83 (2006) (filed as Ex. E Tab 12). Dr. Romberg also noted that 2.5 million teenagers receive an HPV vaccine annually in the United States. Second Romberg Rep. at 2. Based on these two statistics, Dr. Romberg stated that he would expect anywhere between 11 and 33 children who received the HPV vaccine to develop ITP. *Id.* To support his conclusion, Dr. Romberg cited a study in the Journal of Autoimmunity, a journal which counts Dr. Shoenfeld as one of its co-editors. *See* Grimaldi-Bensouda et al., *Risk of autoimmune diseases and human papilloma virus (HPV) vaccines: Six years of case-referent surveillance*, 79 J. AUTOIMMUNITY 84-90 (2017) (filed as Ex. G, Tab 4). In this article, the authors noted that the rate of HPV vaccination in 77 ITP patients was not different than rates in 87 controls (14.3% to 12.5%). *Id.*; *see also* Second Romberg Rep. at 2.

As discussed above, Respondent cited to a number of epidemiologic studies in an effort to demonstrate that no vaccine other than MMR is credibly linked to ITP. Epidemiologic evidence

is relevant with respect to *Althen* prong one. *See, e.g., D'Tiole v. Sec'y of Health & Hum. Servs.,* 2016 U.S. Claims LEXIS 2003 (Fed. Cl. Spec. Mstr. Nov. 28, 2016), *aff'd*, 132 Fed. Cl. 421 (2017); *Blackburn v. Sec'y of Health & Hum. Servs.*, No. 10–410V, 2015 WL 425935, at *28–30 (Fed. Cl. Spec. Mstr. Jan. 9, 2015). However, this type of evidence is not required in order for a petitioner to establish that a vaccine can cause an injury. A vaccine injury is a rare event that cannot be disproved because a vaccinee did not experience a response consistent with that of the general population. *See Harris v. Sec'y of Health & Hum. Servs.*, No. 10–322V, 2014 WL 3159377, at *11 (Fed. Cl. Spec. Mstr. June 10, 2014) (finding that epidemiologic studies cannot absolutely refute causal connections, because it is possible that a larger study could always detect an increased risk), *mot. for review dismissed*, 2015 U.S. App. LEXIS 7921 (Fed. Cir. 2015).

It is settled that "close calls" as to the causal link between a vaccine and the injury asserted by a Petitioner asserting a claim should be resolved in favor of the Petitioner. *Knudsen by Knudsen*, 35 F.3d at 549. In *Johnson v. Sec'y of Health & Hum. Servs.*, the Petitioner provided case study evidence in a successful effort to specifically link the HPV vaccination to ITP under *Althen* prong one. No. 14-113V, 2017 U.S. Claims LEXIS 149 at *56-57. While case reports are not robust evidence, they do constitute some evidence with which petitioners can meet their burden in the Vaccine Program. *See Contreras v. Sec'y of Health & Hum. Servs.*, 107 Fed. C. 280 (Fed. Cl. 2012); *see also Capizzano* 440 F.3d at 1325-26. Petitioner filed similar case reports in this case. Based on the Petitioner's expert reports, the medical literature linking vaccination to ITP, the case reports connecting the HPV vaccine to ITP, along with the well-reasoned decisions of other special masters finding a causal connection between vaccination and ITP, I find that Petitioner has carried his burden with respect to *Althen* prong one.

2. *Althen* Prong 2

Under *Althen's* second prong, a petitioner must "prove a logical sequence of cause and effect showing that the vaccination was the reason for the injury." *Althen*, 418 F.3d at 1278. The sequence of cause and effect must be "'logical' and legally probable, not medically or scientifically certain." *Id.* A petitioner is not required to show "epidemiologic studies, rechallenge, the presence of pathological markers or genetic disposition, or general acceptance in the scientific or medical communities to establish a logical sequence of cause and effect." *Id.* (omitting internal citations). *Capizzano v. Sec'y of Health & Hum. Servs*., 440 F.3d 1317, 1325 (Fed. Cir. 2006). Instead, circumstantial evidence and reliable medical opinions may be sufficient to satisfy the second *Althen* prong. *Isaac v. Sec'y of Health & Hum. Servs.*, No. 08-601V, 2012 U.S. Claims LEXIS 1023 at *75 (Fed. Cl. Spec. Mstr. July 30, 2012)

a. *Petitioner's Treating Physicians*

In weighing evidence, special masters are expected to consider the views of treating doctors. *Cappizano*, 440 F.3d at 1326. The views of treating doctors about the appropriate diagnosis are often persuasive because the doctors have direct experience with the patient whom they are diagnosing. *See McCulloch v. Sec'y of Health & Hum. Servs.*, No. 09-293V, 2015 WL 3640610, at *20 (Fed. Cl. Spec. Mstr. May 22, 2015).

In this case, no treating physician implicated either the flu vaccine or the HPV vaccine as the cause of Petitioner's ITP. In fact, several of Petitioner's doctors either made reference to his recent upper respiratory infection (URI) or more closely correlated Petitioner's ITP to his URI. For example, when Petitioner presented to the emergency room on March 26, 2014, Dr. Mullin noted that "[Petitioner] is a 17 Y male who presents with bruising after an apparent upper respiratory tract illness 1 ½ weeks ago." Ex. 1 at 302. On March 26, 2014, Dr. Elaine Oliveira, noted that Petitioner was a "[diagnosed] with ITP 2 wk after a cold." *Id.* at 311. In addition, on August 19, 2014, Petitioner visited Dr. Lakshminarayanan for an IGIV infusion. The notes from this visit state: "Here today for IVIG for h/o epistaxis, triggered by a URI." *Id.* at 673. The medical records also indicate that Dr. Sutijono entered the following notation: "Per chart review, recent URI, evaluated in clinic for bruising." *Id.* at 364. In total, these notations suggest that Petitioner's treating physicians ascribed some significance to his March 2014 URI with respect to the onset of his ITP. None of them mentioned his vaccinations as causal.

b. *Petitioner's Medical Records*

There is also not evidence in Petitioner's medical records which indicates that Petitioner's vaccinations caused his ITP. In attempting to articulate the basis for his opinion that Petitioner's ITP was caused by his vaccinations, Dr. Ahmed stated:

> I believe that the influenza vaccination received by the Petitioner on November 20, 2013 triggered the onset of the autoimmune disease called immune thrombocytopenic purpura (ITP) for the following reasons: There appears to be no evidence of active autoimmune disease suggestive of ITP prior to influenza vaccination. There is clear evidence of ITP development after influenza vaccination. There is a temporal relationship linking the receipt of vaccine on November 20, 2013 to development of symptoms of ITP.

Fourth Ahmed Rep. at 4.

The basis for Dr. Shoenfeld's opinion was similar. He stated:

> In conclusion, it is obvious from the above that in John Phillips' case we have (1) a medical theory causally connecting vaccination and the injury; (2) a logical sequence of events and a medically plausible mechanism (cross-reactivity) showing that the vaccination could have caused the autoimmune injury; (3) a clear temporal relationship between vaccination and injury; (4) previous precedents where the same vaccine caused the same type of injury and within the same timeframe and finally; (5) lack of any reasonable alternative causes that could explain the emergence of a disabling condition in a previously healthy individual. Therefore, it is most likely that Gardasil was the cause of ITP in John Phillips' case.

First Shoenfeld Rep. at 17.

Simply put, the only evidence Petitioner asserts as supporting a logical sequence of cause and effect between the vaccinations and the injury is the development of disease after vaccination

in a previously healthy individual. This showing is insufficient. *See Grant v. Sec'y of Health & Hum. Servs.*, 956 F.2d 1144 (Fed. Cir. 1992) ("temporal association is not sufficient…to establish causation in fact."). It does not establish that Petitioner's ITP was caused by either vaccine. For the reasons discussed above, there is not preponderant evidence of a logical sequence of cause and effect between the vaccinations that Petitioner received and his development of ITP. Petitioner has therefore failed to sustain his burden under the second prong of *Althen*.

3. *Althen* Prong 3

The timing prong contains two parts. First, a petitioner must establish the "timeframe for which it is medically acceptable to infer causation" and second, he must demonstrate that the onset of the disease occurred in this period. *Shapiro v. Sec'y of Health & Hum. Servs.,* 101 Fed. Cl. 532, 542-43 (2011), *recons. denied after remand on other grounds*, 105 Fed. Cl. 353 (2012), *aff'd without op.,* 503 F. App'x 952 (Fed. Cir. 2013).

a. *Petitioner Developed ITP Sixteen Weeks after his Vaccinations*

i. Medical Record Evidence

The medical records establish that Petitioner developed the first signs and symptoms of ITP on or around March 11, 2014.

On March 25, 2014, Petitioner presented to Dr. Errera for bruising on his body. The medical records indicate that Petitioner's symptoms "started with cough about two weeks ago that lasted for about 1.5 weeks then resolved. … Around time of coughing started with some bruising on the left upper inner arm that has steadily gotten larger and somewhat darker and firm." Ex. 1 at 277. Two weeks before March 25 is March 11, 2014.

On March 25, 2014, Petitioner presented to the emergency room for thrombocytopenia. Petitioner "reported fatigue/weakness for the past 1.5-2 weeks with associated mild non-productive cough, occasional blood tinged phlegm, bruising, 2 episodes of epistaxis." Ex. 1 at 295. On March 26, 2014, while still in the hospital, Petitioner was seen by Dr. Elaine Oliveira, who noted that Petitioner was a "17 wk [sic] old dx with ITP 2 wk after a cold." *Id.* at 311.

On March 15, 2016, Petitioner presented to Dr. Stephen Wang for a second opinion regarding his ITP. Dr. Wang indicated in the medical records that "[Petitioner] is an 18 Y male with immune thrombocytopenia for second opinion. Presented in Nov 2013 shortly after vaccinations (flu, HPV) and antibiotics for upper respiratory infection, developed easy bruising. By March 2014 ecchymoses persisted, labs showed thrombocytopenia 7k…." Ex. 2 at 10. This record seems to suggest that Petitioner developed bruising sometime after November 2013 and that "ecchymoses persisted" in March. This appears to be the only medical record which indicates onset of bruising may have taken place before March 2014.

I find that the description of symptoms in the medical records from March 2014 carry more weight than the March 15, 2016 entry. This is for several reasons. First, Petitioner visited three different doctors in March 2014 and consistently reported onset of bruising one-and-one-half to two weeks prior. Each subsequent medical visit gave Petitioner the opportunity to reflect on the

information he provided to his doctors (and presumably to change this information if it was inaccurate). I find the fact that Petitioner repeated the same onset timeline to all three physicians to be significant. Additionally, Petitioner's initial medical visits on March 25 and 26, 2014 were close-in-time to what he described as the onset of his bruising. It makes sense that Petitioner and his mother would have been as accurate and thorough as possible in relating when Petitioner's bruising began in order to facilitate his medical treatment. When Petitioner discussed bruising at these March 2014 visits, the clinical disease onset was still fresh in Petitioner's memory. This is in contrast to Petitioner's single medical appointment in March of 2016, which was approximately two years after onset of bruising. "Written documentation recorded by a disinterested person at or soon after the event at issue is generally more reliable than the recollection of a party to a lawsuit many years later." *Reusser v. Sec'y of Health & Hum. Servs*., 28 Fed. Cl. 516, 523 (1993). For the aforementioned reasons, I find Petitioner's medical records preponderate in favor of onset of bruising on approximately March 11, 2014.

ii. Other Evidence

Petitioner discussed signs and symptoms of ITP that he claims began earlier than March. In his affidavit, Petitioner stated "I was suffering from symptoms such as fatigue, bruises, and petechiae for months before my diagnosis. Ex. 4 at 1. However, in her affidavit Petitioner's mother, Dawn Phillips did not mention an earlier onset of abnormal bruising; she stated, "John began developing bruises and coughing up blood in March." Ex. 5 at 1.

Petitioner also filed photographs of his bruises with dates attached to them, and an article in a local newspaper. Ex. 6. The first photograph, dated 3/6/14 is entitled "Ready for Varsity Wrestling next year." *Id.* at 1. The picture depicts Petitioner from the waist up with no shirt on. No bruising or petechiae are visible in this photo. A photo dated 3/20/04 shows a bruise on the underside of Petitioner's left arm. *Id.* at 2. A third photo is dated 3/22/04 and depicts several bruises on Petitioner's right hand and arm. *Id.* This photographic evidence supports an onset of ITP signs and symptoms between March 6 and March 20, 2014.

An article entitled "Excelling Beyond the Pain"[14] was published on November 21, 2014. In it, the author wrote that Petitioner "suffered from extreme fatigue and the appearance of large bruises under his skin that looked like polka dots for a couple months before he was taken to the hospital on the morning of his 17th birthday in March." Ex. 6 at 18. This article is consistent with Petitioner's affidavit concerning the onset of his bruising and inconsistent with the majority of the other evidence filed on this point.

In order to overcome the presumption that contemporaneous written medical records are accurate, testimony must be "consistent, clear, cogent, and compelling." *Blutstein*, 1998 WL 408611, at *5. Because of this presumption, "special masters in this Program have traditionally declined to credit later testimony over contemporaneous records." *Sturdivant v. Sec'y of Health & Hum. Servs.,* No. 07-788V, 2016 WL 552529, at *15 (Fed. Cl. Spec. Mstr. January 21, 2016). *See, e.g., Stevens v. Sec'y of Health & Hum. Servs*., No. 90–221V, 1990 WL 608693, at *3 (Cl.

[14] I note that this article incorrectly labels the large bruise on Petitioner's left arm as "Petechiae". Ex. 6 at 17.

Ct. Spec. Mstr. December 21, 1990); see also *Vergara v. Sec'y of Health & Hum. Servs*., No. 08–882V, 2014 WL 2795491, at *4 (Fed. Cl. Spec. Mstr. July 17, 2014) ("Special Masters frequently accord more weight to contemporaneously-recorded medical symptoms than those recorded in later medical histories, affidavits, or trial testimony."); *See also, Cucuras*, 993 F.2d at 1528 (noting that "the Supreme Court counsels that oral testimony in conflict with contemporaneous documentary evidence deserves little weight").

I find the contemporaneous medical records along with the dated photographs filed in this case are compelling evidence regarding this issue of onset. A preponderance of the evidence establishes that Petitioner developed signs and symptoms of ITP on or around March 11, 2014, or 16 weeks after his vaccinations.

iii. There is not Support in the Medical Records that Petitioner Developed ITP Six Weeks after Vaccination

Dr. Ahmed has opined that the onset of Petitioner's ITP occurred within six weeks of his vaccinations, and that Petitioner "could plausibly have been asymptomatic until the platelets had dropped low enough to permit spontaneous bleeding in mid-March 2014." Second Ahmed Rep. at 2; *see also* Fourth Ahmed Rep. at 5. In a separate report, Dr. Ahmed acknowledged that the onset of Petitioner's purported subclinical ITP was unclear. ("What is not clear is when did the subclinical autoimmunity start in the Petitioner…") Fifth Ahmed Rep. at 4.

Dr. Ahmed cited the Sauvé article in support of his theory that Petitioner was asymptomatic until mid-March. This article examined postvaccination ITP in Canada and found that of the 107 hospitalized children with ITP, 96% were symptomatic. Sauvé at 560. Dr. Ahmed stated these data "imply [] that 4% did not present with symptomatic bleeding." Fourth Ahmed Rep. at 2. While it is possible that a patient could present to the hospital with no symptoms and subsequently receive an ITP diagnosis, this possibility does not constitute evidence that this happened in Petitioner's case.

I specifically asked Dr. Ahmed to respond to the following question: "What evidence is there in the record to suggest that Petitioner was asymptomatic for 2.5 months?" Fifth Ahmed Rep. at 6. Dr. Ahmed did not directly answer my question. He stated:

> The clinical records indicate that the Petitioner reported nasal bleeding on two occasions on March 18, 2014 (Exhibit 1 in initial expert report, p. 278), coughing up bloody phlegm, and had bruises appearing on his arm during March 22-23, 2014 (Exhibit 1 in initial expert report, p. 278). The Petitioner was seen by his Pediatrician, Dr. Timothy Shea Errera, (Exhibit 1 in initial expert report, 279) at the Permanente Medical Group in Elk Grove, California. Dr. Errera's physical exam of the skin showed multiple scattered petechiae on upper arms, upper side, and Petitioner's back. The left upper/inner arm of the Petitioner was noted to have a 14 x 4 cm bruise (black-blue in color). His platelet count was measured by the laboratory and reported to be 7,000 (normal range being 140,000 to 400,000). Prior to this, there were no other relevant symptoms to my knowledge.

Id.

Dr. Shoenfeld made a similar argument when he stated that there was a three-and-one-half month "incubation time" between vaccination and when Petitioner's symptoms became overt. Second Shoenfeld Rep. at 1-2. As support for this theory, Dr. Shoenfeld pointed to other diseases where the incubation times are longer (SLE, 10 years and PBC (primary biliary cholangitis), 25 years). *Id.* The fact that other diseases may have long periods of time where patients remain asymptomatic does not constitute evidence that this same phenomenon occurs with ITP, or importantly that it took place in this case. In fact, this argument appears to be entirely theoretical, as no mention of evidence from Petitioner's case was discussed.

Petitioner's participation in competitive wrestling further undercuts the theory of subclinical ITP. If Petitioner developed subclinical ITP within six weeks of his vaccination, that would place his insidious disease onset on or before January 1, 2014. Under Petitioner's theory, this would mean that Petitioner was asymptomatic from January 1, 2014 until approximately March 10, 2014 (the day before onset of his cough with blood tinged phlegm). This subclinical onset is extremely unlikely given that Petitioner was a junior varsity wrestler.

The letter from Patrick Coffing, Petitioner's wrestling coach states that the last wrestling event in which Petitioner was eligible to participate took place on February 8, 2014. Ex. 104 at 1. The letter also states that "[i]f he had any contagious skin infections he would not be practicing in the room or competing in events. He did have a diagnosis of Impetigo early in the season and had to sit out until it cleared up." *Id.* This statement is consistent with Petitioner's medical records which indicate that Petitioner was seen by Dr. Errera for a rash on his face on December 12, 2013. Ex. 1 at 259. The majority of the rash cleared by December 26, 2013. *See id.* at 266 (where Petitioner's mother indicated in an email that "everything cleared up except for underneath his chin."). The rash likely cleared completely sometime in January 2014, as Petitioner's mother emailed Dr. Errera on January 30 and informed him of a different rash and also indicated that the December rash "was gone" after treatment. *See Id.* Although it is not clear the exact date that Petitioner's December rash had entirely dissipated, it is reasonable to assume the rash went away in early January. Petitioner's mother was vigilant about communicating with Dr. Errera regarding Petitioner's health, and there is no communication between December 26 and January 30. Further, Mr. Coffing only referred to one time, toward the beginning of the season, where Petitioner had to sit out due to a rash. *See* Ex. 104 at 1. The wrestling season appears to have started in early December. *Id.* at 2. When taken together, these records demonstrate that in the month of January alone, Petitioner more likely than not participated in wresting meets on January 4, 11, and 18. *See Id.* This does not include the regular practices that are a part of every high school sports schedule.

In addition, Petitioner's mother stated in her affidavit: "The day before his 17th birthday I called in to make an appointment and described his symptoms. I was told to come in as soon as possible…. I called the coach to tell him to stop John from wrestling." Ex. 5 at 1. This statement indicates that Petitioner was still wrestling in March of 2014. Based on the foregoing, I find it unlikely that Petitioner developed subclinical ITP while participating in wrestling.

An examination of the relevant medical records does not suggest that Petitioner developed subclinical ITP two-and-one-half months before he developed bruising and low platelets. This is

a theory proposed by Drs. Ahmed and Shoenfeld that does not find support or substantiation in the medical records.

b. *Sixteen Weeks between Vaccination and Onset of Symptoms is not a Medically Appropriate Onset Interval*

Onset of ITP following vaccination is thought to occur in the days to weeks following vaccination. O'Leary notes that when assessing the risk of ITP after vaccination, the vaccine-exposed period is defined as 42 days post vaccination. O'Leary at 3. The Sauvé article states that the subjects "who received MMR with no coadministered vaccines presented a mean of 17 days after immunization." Sauvé at 560. Of note, under 42 C.F.R. § 100.3(a)(V)(A), in order to satisfy the Table requirement for ITP following MMR vaccine, vaccination to onset of symptoms must occur within seven to 30 days. According to Dr. Romberg, this is because the MMR vaccine "require[s] a period of en vivo replication before initiating an immune response." First Romberg Rep. at 4.

Dr. Gill opined that "vaccine associated antibody-mediated adverse events occur within four to six weeks (42 days) of immunization." Gill Rep. at 4. Dr. Gill went on to state that:

> Initial exposure to infectious agents as well as to killed/inactivated vaccines such as the varicella vaccine induces a primary immune response resulting in the production of antibodies within 10-14 days with peak levels four to six weeks later (Baxter, 2007). Thus, if the vaccine had caused antibodies that bound John's platelets and caused ITP, one would have expected the onset of thrombocytopenia much sooner. John developed ITP *four months* after vaccination, well outside the expected time frame for development of antibodies that might result in ITP.

Id. Dr. Romberg agreed with Dr. Gill's assessment. He opined that "by no standard … is 125 days (17.9 weeks)[15] a reasonable amount of time to develop vaccine-triggered ITP." *Id.* Dr. Strouse added that three-and-one-half months "is outside the typical time frame for the development of autoimmune thrombocytopenia based on the published studies on MMR vaccination and case reports of autoimmune thrombocytopenia purpura after influenza vaccination in which the majority of cases occurred within 6 weeks." Strouse Rep. at 2.

Based on the above-mentioned medical literature and expert opinions, I find that ITP can occur any time between one to six weeks following immunization. Because Petitioner's ITP developed well outside of this window, I find that Petitioner has not met *Althen* prong three.

VII. Conclusion

Upon careful evaluation of all the evidence submitted in this matter, including the medical records, the testimony, as well as the experts' opinions and medical literature, I conclude that Petitioner has not shown by preponderant evidence that he is entitled to compensation under the

[15] Although I concluded that Petitioner developed ITP 16 weeks after his vaccinations, Dr. Romberg's reasoning still applies.

Vaccine Act. **His petition is therefore DISMISSED. The clerk shall enter judgment accordingly.**[16]

IT IS SO ORDERED.

s/ Katherine E. Oler
Katherine E. Oler
Special Master

[16] Pursuant to Vaccine Rule 11(a), the parties may expedite entry of judgment by each filing (either jointly or separately) a notice renouncing their right to seek review.